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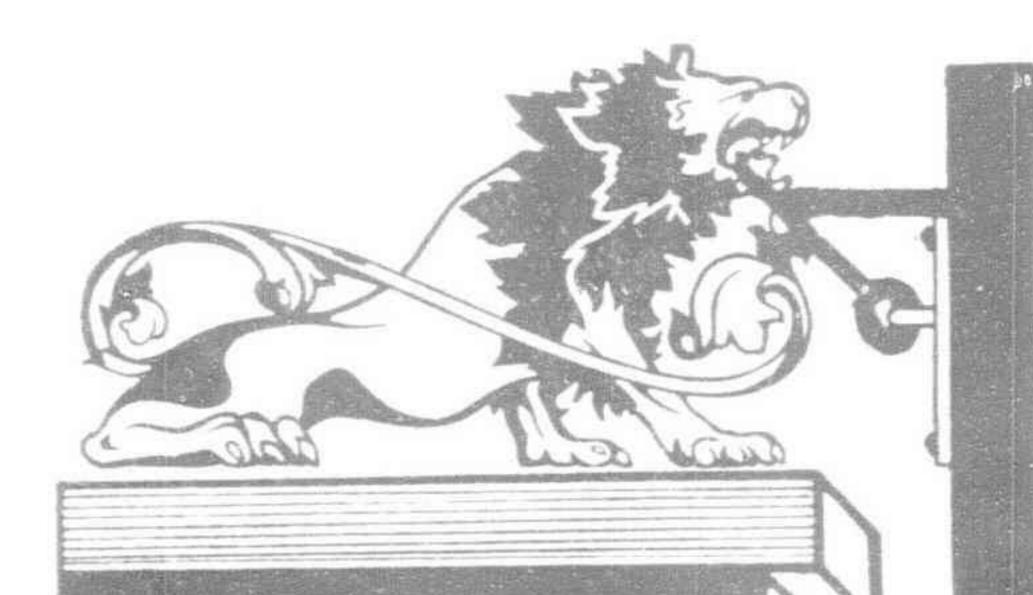
MANILA AND SHANGHAI, NOVEMBER, 1905

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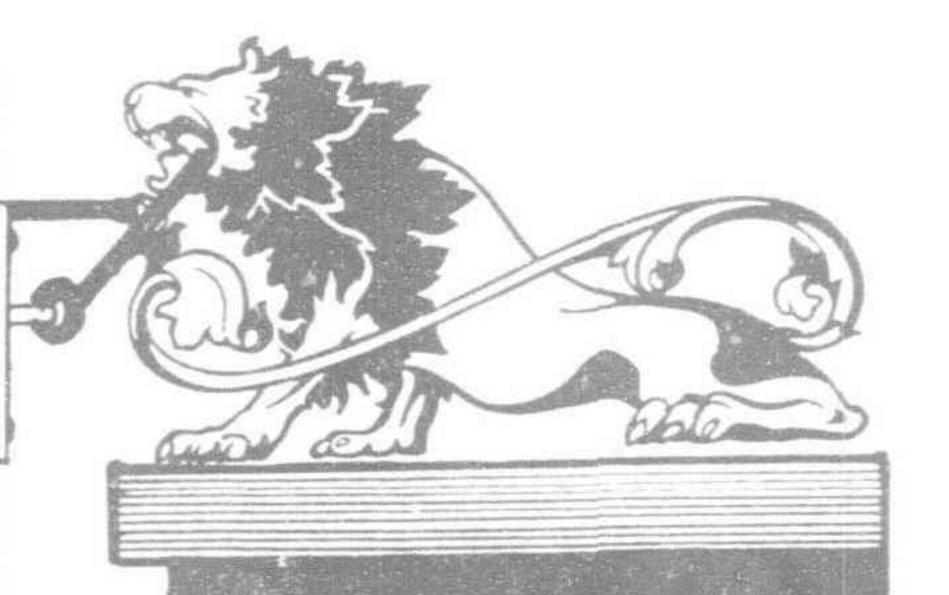


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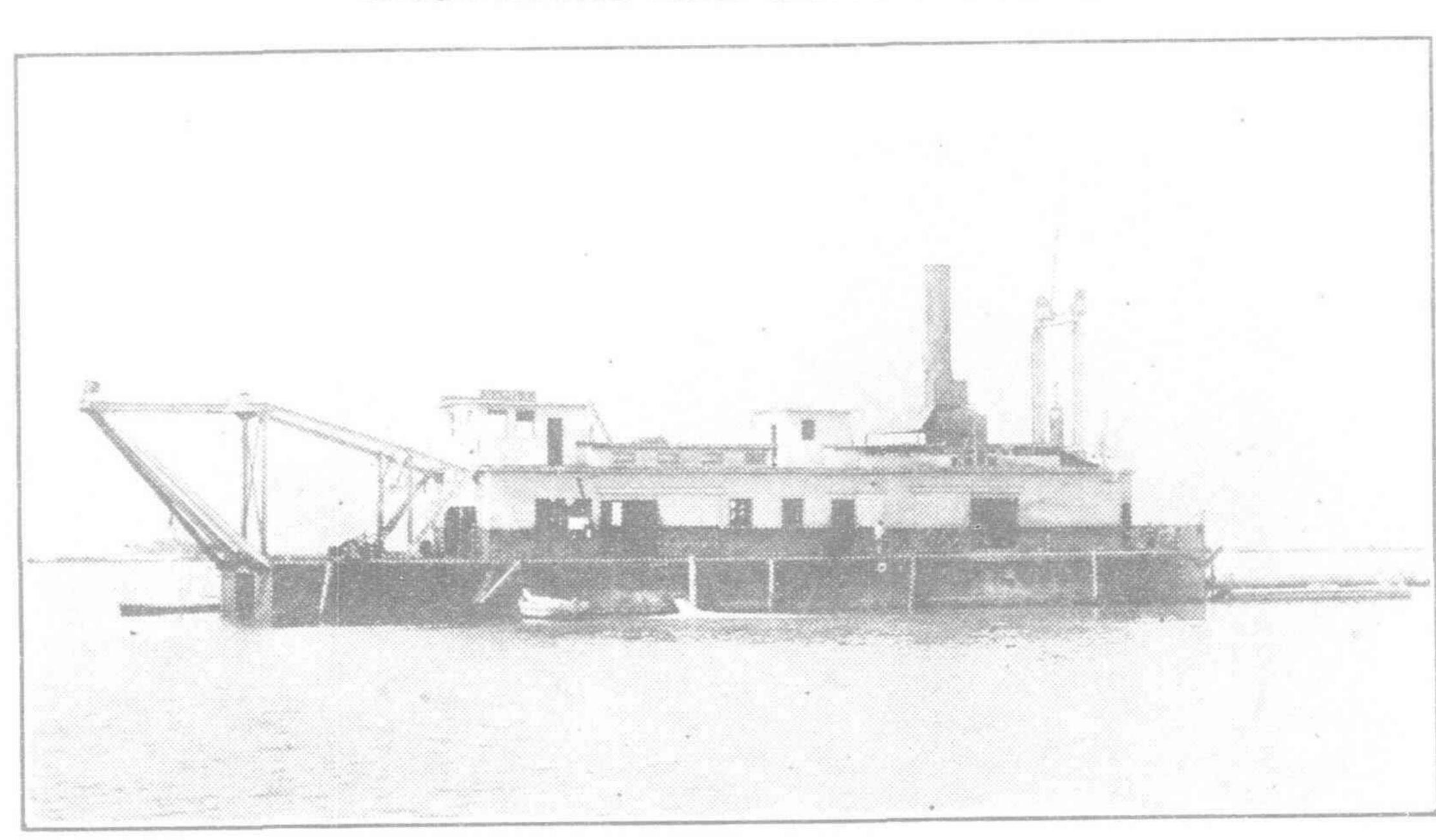
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## HE FAR EASTERN REVIEW

COMMERCE @ ENGINEERING @

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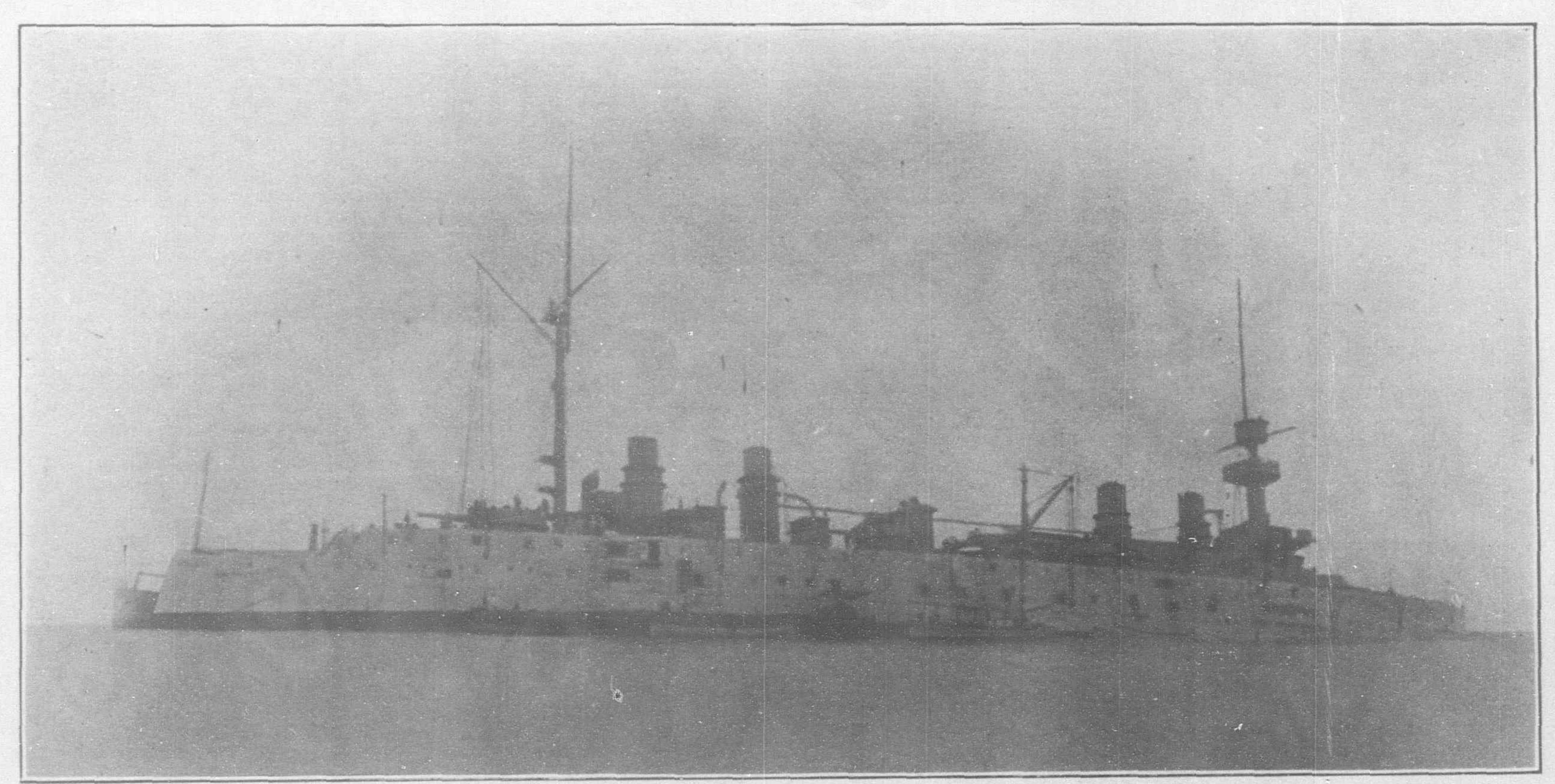
## NOVEL ENGINEERING EFFORT TO SALVE THE FRENCH CRUISER "SULLY"

In a recent excellent supplement to its daily edition, the enterprising Hongkong Telegraph announced that the great French cruiser Sully, which lay on the rocks in Along Bay, off the Tonkin Coast, had become a total wreck necessitating the abandonment of further salvage operations which had been undertaken by a syndicate of Hongkong capitalists under authorization of the French Government. From the date of the stranding of the giant warship until the abandonment of the attempt to salve her, great interest in the novel engineering features involved prevailed everywhere in marine circles throughout the Far East. In view of this fact THE FAR EASTERN REVIEW,

and well-built vessel. Disaster befell her early in February, 1905.

CAUSE OF THE ACCIDENT .- At the courtmartial held on board Montcalm, Commander Guiberteau was acquitted of all blame in connection with the disaster, and the accident was directly attributed to the defective and unsatisfactory hydrographic survey of the coast of Indo-China. When the accident occurred Sully was engaged in target practice, and was carrying out maneuvers in waters which had already been traversed by Gueydon. The latter completed her maneuvres in safety, but Sully was not so fortunate. She crashed onto the rocks when going at a speed of 11

dangerous character, especially as a high sea was running, but after much trouble the transfer was safely accomplished. Several of the guns on the upper deck remained aboard the cruiser, for the simple reason that it was considered impossible to get them off without herculean \*efforts. The impression of the writer was that the work of saving Sully would be an exceedingly difficult task, and he added that only those who had been on the spot could realize the condition of the warship. It was estimated that the cruiser lay 120 meters from the Canot Rock. There were 12 meters of water in the fore part of the vessel, and all the machinery was practically destroyed. The



CRUISER SULLY ON THE REEF IN ALONG BAY, PHOTOGRAPHED SHORTLY AFTER THE ACCIDENT.

with the kind assistance of Mr. E. A. Snewin, editor of the Hongkong Telegraph, has gathered for its readers some highly interesting un-

published photographs of the wreck. For eight months the cruiser Sully lay on the rocks in Along Bay withstanding the force of sea and wind. She was built at La Seyne in 1901 at a cost of £954,536, and was an armoured cruiser. Her displacement was 10,014 tons. She had an indicated h. p. of 20,500, capable of attaining a speed of 21 knots, and carried a complement of 615 men. She came to the Orient a few months before her accident in Along Bay, and was regarded as a powerful

knots, and remained fixed there. She sustained very considerable damage, and when, shortly afterwards, a representative of L'Avenir du Tonkin visited her, he found the ship resting like "some giant animal mortally wounded to the heart and in agony." She was lying on one side, with her bow deeply sunk in the shoal. Great part of the ordnance on board had been transferred to another vessel, which had been engaged for the work of relieving the strain on the decks, and a number of sailors had also left Sully, with the view of lightening the burden on the cruiser. The operations of removing the cannon were of an exceedingly difficult and

most alarming feature as to the possibility of saving her was the fact that she was balanced on the reef in a most unstable position. Soundings were taken, and it was found that the water was 18 meters deep on one side and 5 meters on the other, the vessel lying at an angle of 8 degrees. The saving of the ship depended entirely upon the wind and tide-whether she was broken by bumping on the rock or capsized by the force of wind and waves. If the wind remained calm and the water smooth it was thought that Admiral Bayle might succeed with help in getting Sully safe off the reef.

(Continued on page 142.)

## THE FAR EASTERN REVIEW

## COMMERCE :-: ENGINEERING :-: FINANCE

A MONTHLY REVIEW OF FAR EASTERN TRADE, FINANCE, AND ENGINEERING. DEDICATED TO THE INDUSTRIAL DEVELOPMENT AND ADVANCE-MENT OF TRADE IN THE PHILIPPINES AND FAR EASTERN COUNTRIES.

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## MANILA AND SHANGHAI, NOVEMBER, 1905

## THE PHILIPPINE TARIFF COMMITTEE

Governor-General Luke E. Wright; Commissioner W. Cameron Forbes, Secretary of Commerce and Police; Dr. W. C. Welborn, Chief of the Bureau of Agriculture; Mr. George Bronson Rea, publisher and editor of THE FAR EASTERN REVIEW, and Sr. D. Esteban de la Rama, of Iloilo, the last-named gentleman representing the native sugar planters, have sailed for the United States to work for more favorable congressional legislation at Washington for these possessions. Governor-General Wright and Commissioner Forbes expect to be present at the national capital when bids for the construction of railroads in the Philippines, under concessionary contract with the government, are opened there, after which the Governor-General will devote his energies to the successful outcome of our efforts for free trade with the home country. Dr. Welborn, Mr. Rea, and Sr. de la Rama will cooperate with him in this fight.

Indications are that the fight for absolute free trade will be bitterly opposed as applied to tobacco and sugar. There is practically no opposition to the free entry of other products

on a reciprocal basis, but the big tobacco and sugar trusts of the homeland have again come to the fore with powerful opposition to free entry for these products, or even a reduction of the duties which are now in force. Therefore, while our friends hope that free trade may include tobacco and sugar, there seems to be a growing opinion here and in Washington that if the committee succeeds in getting the present prohibitory tariff reduced to 25 per cent of the Dingley rates, it will have accomplished most satisfactory results.

The cause of the Philippines has been gaining many friends during the last four months among the legislators at Washington. Those congressmen, who came to the Islands with Secretary Taft and saw for themselves the truly deplorable condition of our agriculture, can not help but be convinced that we need the tariff concessions which we are seeking from the American people. Certainly some of them will line up with the trusts in spite of justice and fair play, because they are trust legislators and would never come over to our side. Such a change of front would mean their political downfall. To save their political "face" they must stick to the trusts. With them fair play for the Philippines is an unknown quantity. They did not come to the Islands for an impartial personal survey of our internal conditions. They came here to better fortify the opposition against our demands. These antagonists, however, were a large minority in the personnel of the Taft party. The fair-minded, unpledged majority were won over to our cause in the face of strong influences by the justice of our appeal. They will be in Washington to help the committee, also, in its fight. In view of this important gain to our interests, and with the influence of the President and the Secretary of War on our side, our prospects of success are very bright to say the least.

Of the two products-tobacco and sugarthe hardest fight will be on sugar. The cane and beet growers of the homeland, backed by Havemeyer and the Oxnard clique, are the "calamity howlers" against our product. Thus far they have been able to destroy our efforts, because, by the subtle distortion of facts and figures with reference to the possibilities of the sugar industry in the Islands under the impetus of capital and modern machinery, and by the lack of technical advice on our part to refute their arguments against the industry, they have practically had everything at Washington their own way. Mr. Rea will, in all probability, lead the fight for sugar. He is an expert sugar engineer, with years of experience in Cuba, and good knowledge of the methods of the trusts, and he is going to Washington armed with an enormous amount of valuable and convincing data which he has gathered in the Islands to present at the committee hearings. Besides, he will have the experienced cooperation of the Chief of the. Agricultural Bureau, and of Sr. de la Rama, in addition to which labors Dr. Welborn will lead the fight for the tobacco interests. It is safe to assume, however, that the success of the fight for sugar will carry with it success for the tobacco interests.

We believe Governor-General Wright is taking to Washington a tariff committee that will safeguard our interests. It only remains for congress to give us fair play, and our fight will succeed. The American people always have insisted on right and justice in their domestic and foreign policies. Let us hope, therefore, that they will not fail us in this our time of great need. They owe us their friendship first of all for humanity's sake. They must help us revive our agriculture, our industries, and our commerce with even more sincerity than they have thus far shown in their efforts to improve the political and social condition of the Filipinos, which have for their ultimate object a government in the Islands of the people for the people and by the people.

## THE CANTON-HANKOW RAILWAY.

In view of the fact that the colonial government of Hongkong has undertaken to advance the money to the Chinese for the redemption by the latter of the Canton-Hankow Railway

concession from the American syndicate, much interest centers just now in the ultimate outcome of the deal. One of the most important of the latest phases of the transaction is the decision of the government council at Peking that no foreign loan will be allowed in the redemption of the concession, and that the British aid must be withdrawn. This ruling in the face of the fact that the loan was closed and the first payment made by the Hongkong Government before the publication of the Peking protest, seems likely to bring about complications between the British interests and the Peking Government which may not be settled

in a day.

There seems to be little doubt but that China was entirely justified in cancelling the American concession and demanding the restoration of the railway, etc., to the Chinese. In 1898, China granted a concession to the American-China Development Company, which provided for the construction of an 800-m. trunk-line railway from Hankow to Canton. The concession, which involved coal-mining rights and industrial franchises, was to run for 45 yrs., at the end of which period the property was to go to the Chinese Government. The proposed line is the southern extension of the Belgian road from Peking to Hankow, and forms part of a great transportation route leading directly through the heart and commercial center of China. The company, however, built only about 30 of the 800 ms., but surveyed 100 ms. more. Then the Americans flagrantly violated the terms of their agreement by secretly selling out their interests to the Belgians, among whom King Leopold was the moving spirit. When this transfer became known to China she entered a most vigorous protest against the deal and demanded the return of the concession by the American Government. King Leopold advised J. Pierpont Morgan, the latest head of the American syndicate, not to listen to the demand of the Chinese Government, but President Roosevelt told the New York financier what he thought about the deal, and this brought the Americans to thaw. At a meeting of the stockholders of the American-China Development Company, August 9th last, it was decided to cancel the deal with the Belgians, and with the consent and advice of President Roosevelt to return the concession to the Chinese for \$6,750,000 gold, which arrangement the Peking authorities accepted.

Thus we have the financial interest in the Canton-Hankow Railway transferred by the Americans to the Belgians without the knowledge or consent of the Chinese; by the Belgians back to the Americans as the result of Chinese protest; by the Americans ostensibly to the Chinese through cancellation of the concession, but in reality by the Americans to the financial control of the British Government of Hongkong. In this connection it is interesting to note the remarks on this phase of the transaction made by the Hon. Mr. Gershom Stewart, chairman of the Hongkong branch of the China Association, at its annual general meeting on October 25th. Leading up to the Canton-Hankow Railway concession, by reference to the ending of the Russo-Japanese war, the chairman

said:

"And it looks as if we are profiting by the occasion, as witness the new loan by the Hongkong Government to buy the Americans and Belgians out of the Canton-Hankow Railway. In common with every British subject in China we have reason to rejoice at the forethought which conceived and the wisdom which carried out this bold stroke. Although delay may be tedious and although we may suffer often from hope deferred, we have before us an infinitely brighter prospect than we have had in China ever since the construction of the Siberian Railway, which, with its implied absorption of the N. of China by Russia, hung like a thundercloud over the heads of home capitalists contemplating investments out here. That we have maintained our position as well as we have done is due largely to the tenacity and energy of individual British traders at various ports in China and to the yeomen service which has often been rendered by various consuls, and to the capacity of our minister at present at Peking."

To all intents and purposes American interests n China have been stripped of a most important mpetus to their commercial expansion, and this loss has been the Britishers' gain. Hon. Edward H. Conger, former minister to China, is reported to have opposed the sale, on the ground that the surrender of the concession would be a serious blow to American interests in China, and that American prestige would suffer. But, according to The Literary Digest, in a statement from Oyster Bay it was said that it was the wisest plan which could be devised touching our national interests in the Far East, and that Mr. Morgan had adopted the only course "which he could take with due regard for the interests of the stockholders he

represented." Another reason for the sale was to the effect "that the Chinese Government has decided to force all American and European interests out of China, and that under these conditions further development of the concession would be difficult and unprofitable, if not impossible."

But this latter conclusion seems to be farfetched because we find the Chinese, who are most interested in the completion of the railway, borrowing money from the British, wit's which to buy back the concession. And we feel like heartily complimenting our friends of Hongkong on the apparently successful outcome of their coup, which practically gives them control of, the most important trade center of China. The American papers may try to explain away the unsavory conduct of the New York capitalists in handling the concession, by trying to attribute the redemption by the Chinese to hatred of the "foreign devil," the boycott, or the combination of the Chinese to force American and European interests out of China, but the cold fact remains that had it not been for the juggling of the concession between the Americans and the Belgians the former would have been in peaceful possession of the property today. Witness how readily the Chinese accepted offer of financial assistance from the Hongkong Colony. Does this look like an antiforeign demonstration?

/ Some American papers have contended that grave political significance attached to the transfer of the concession by the Americans to the Belgians. We don't believe this in so far as it relates to the Americans. Probably the Belgians were dickering for political as well as commercial gain, but the Americans simply negotiated with Leopold because there were dollars to be made. Washington was never consulted. Had this been done there is little doubt but that the Canton-Hankow Railway would still be under American control, instead of British. Morgan and his clique simply betrayed American commercial interests in China into other hands for the sake of a little

COMMERCIAL ATTACHES

more money.

In a recent issue of THE FAR EASTERN REVIEW we had occasion to mention the work of Mr. J. W. Jamieson, commercial attaché to His Britannic Majesty's legation at Peking, and point out the high order of the reports and information to his government. Mr. Jamieson has since been honored with

appointment to the Transvaal as special commissioner of Chinese labor, for a term of 2 yrs., for which post he is exceptionally

qualified. Mr. Jamieson's career in China reflects great credit on himself and redounds to the wisdom of his government in creating the post of commercial attaché, and his work stands as a model for other countries, particularly emphasizing the necessity of similar appointments. The trade development of China, at the present time, requires the most careful study and searching investigation by competent men, and the efforts of consuls

should be supplemented by more complete and exhaustive reports.

A rumor has been current in Shanghai for some time that the American State Department has favorably considered this matter and the new post will be tendered to Mr. J. W. Davidson, recent vice consul general at Shanghai. We know of no one better qualified for this task than Mr. Davidson, whose long career in the Orient familiarity with his

subject, keen perception and appreciation of affairs Chinese, and above all his established reputation as an authority and writer on Oriental subjects, places him in a class far above the ordinary aspirant for such a post.

The FAR EASTERN REVIEW would heartily endorse such an appointment as a just tribute to merit and worth, secure in the belief that the work would be intelligently and diligently prosecuted in manner beneficial to American interests and trade expansion.

OUR CONSULAR JUDICIARY

Under the law of all countries where there is ex-territorial jurisdiction, the consul acts judicially in all suits against his nationals, and in the administration of their estates; and by virtue of such jurisdiction, becomes both judge and jury and, as such, passes upon all questions of both law and fact in which the liberty, rights, and property of the American citizen are involved. The large and ever-increasing amounts involved in litigation ad administration certainly entitles American interests to the protection of a court presided over by a judge with at least the same qualifications as an official occupying a similar position at home. This matter has been taken up by a prominent American attorney of Shanghai, in a memorial to congress, through a certain United States senator, in the hope that the national legislative body at Washington will take some action to relieve the American consular service of this embarrassment by instituting necessary reform.

There has been much hue and cry about the "open door" and the building up of American trade in the Far East, and yet our government has provided no judicial machinery by which American property and American rights can be properly and adequately protected. In fact, there has apparently been no attention paid to the condition in which the American citizen is left, and he is compelled to worry along under the antiquated methods adopted in 1864 when China was practically a terra incognita, as if the people who were to build up this muchcoveted trade were not worth considering by the home government. Consuls have usually been appointed for some political reason, and while as a rule they have been honest, intelligent officials, and energetic, we all know that a man's ability to successfully run any business, or even a state or country convention, does not necessarily imply either great legal learning or judicial

temperament.

For a purely executive or business office a business man is always preferable, but when there is coupled with this the most important judicial functions, additional qualifications are required which no purely business man can possibly have. For illustration: Take the position occupied by the consul-general at Shanghai where there are nearly 1,000 Americans residing with business interests mounting into the millions of dollars, and see what a perfectly inconsistent position he is compelled to occupy. Under the American law he is both judge and jury, and under the consular rules and regulations, he is the adviser and sympathizer, and, to a certain extent, guardian of these 1,000 people, with their vast and varied commercial and financial interests. "A" gets into trouble. He makes straight for the consulgeneral, as he has the right to do, and pours into his sympathetic ear his tale of woe. It is the duty of the consul-general, under the rules and regulations, to hear and advise. When "A" departs, "B" appears to get the advice and assistance of the consul-general in downing that fellow "A," and the official must condole with and advise "B" as well. Within a week the consul-general may find himself sitting as both judge and jury in a case where one or maybe both of the parties have been acting under his advice. In short the official is compelled to do that for which as a judge he would be impeached in any state in the Union. Is it right that the American official, acting as judge of an American court, should be placed in this humiliating and inconsistent position? or that American citizens and American interests should be so handicapped?

We believe the American consular service has shown much ability and efficiency, but let the home government cease forcing its officials into the embarrassing and humiliating position

of wet nurses for American interests and then command them to step out as unprejudiced and independent judges of the very interests they were commanded to nurse. It is not fair to the citizen nor just to the official that the government should strip its consular body of that money independence which unprejudiced and unbiased freedom of thought and action that characterizes the upright judge, and then set him up to pass upon the acts of the parties with whom he has acted as adviser. The law forces upon him the judicial functions and the rules and regulations clothe him with powers and duties which wholly unfit him for the position he occupies. To perform his judicial duties as they properly should be performed would force him to prove recreant to his duties as a consular official. To properly perform his consular duties, as required, and then to act as judge between the very parties, one of whom at least in almost every case he has been advising, is to make an honest man feel like a culprit in the court of his own conscience. It is enough to muddle a Marshall, and a mere statement of the conditions to which both the consular officials and citizens are subjected shocks every sense of judicial and professional propriety.

Owing to existing conditions petty matters must necessarily remain under consular management and control. To this nobody objects, but when it comes to the more important litigation and administration of estates, and the protection of the liberty and rights of a citizen, the American should not be left to feel that his government does not take sufficient interest in him even to provide the necessary judicial machinery abroad for his protection. There is a bill pending, prepared by the State Department, providing for a district court for China and Korea, with a judge at \$8,000 per annum, a district attorney at \$5,000, a clerk at \$3,000 and a marshal at \$3,000. This seems to us as a useless waste of money in view of the fact that there is apparently no necessity for anything but a judge, leaving the consular employees to act as a clerk and marshal, just as they do at present. The position of district attorney would indeed be a lazy man's job, as he would have nothing on earth to do but draw his salary. The judge should have a contingent fund of say \$1,000 per annum with which to employ special counsel when necessary and ordinarily that sum would remain untouched at the end of the year. In this connection here are a few suggestions:

All police business and suits for petty sums should remain subject to the jurisdiction of the consuls as at present, with the right of appeal. The judge should hold court at the various

ports as the business required.

A clerk and marshal would be useless appendages and a waste of money, and the business would be better done to have consular employees act as at present.

The consul should, in the absence of the judge, issue all writs returnable before him and

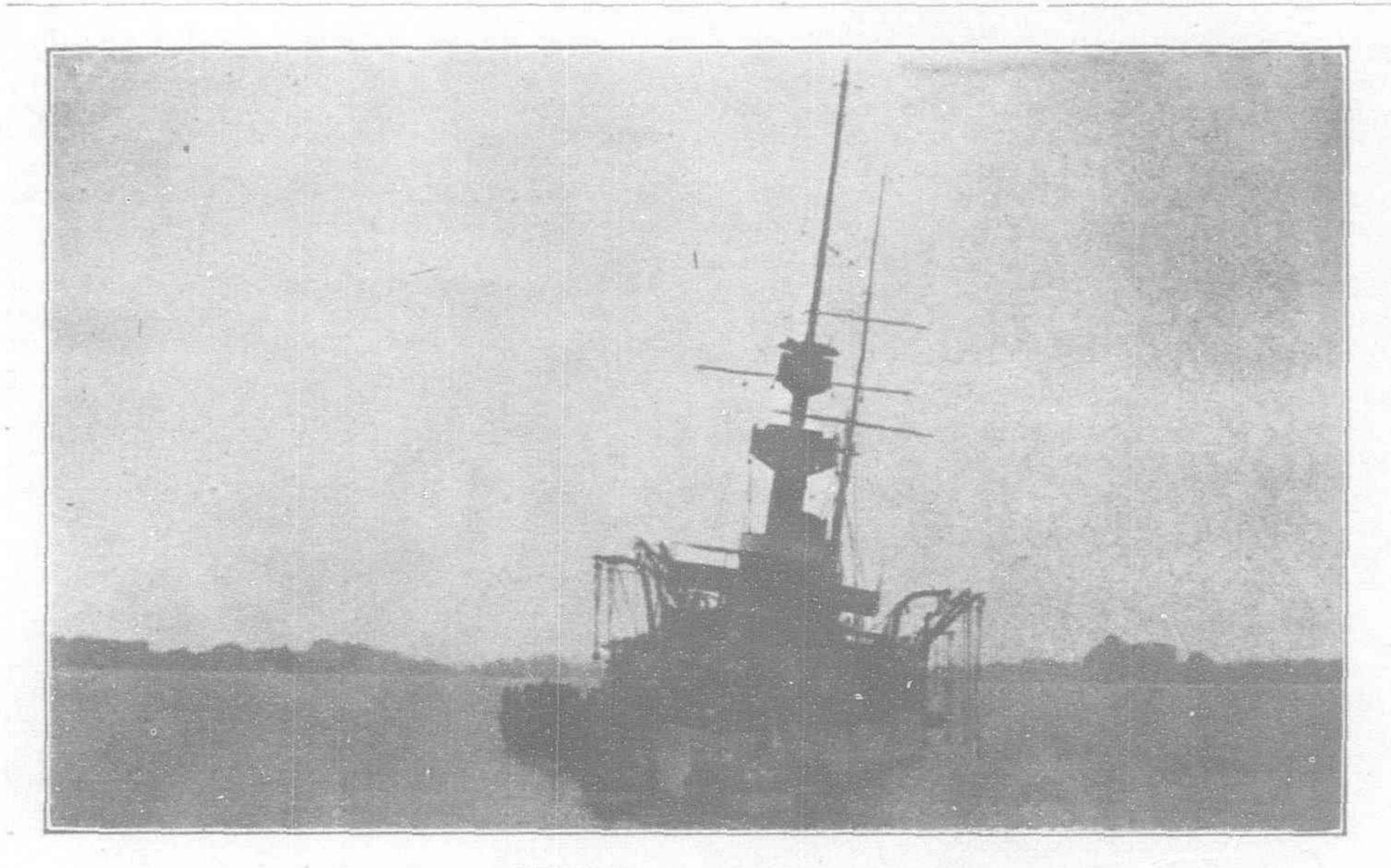
under rules prescribed by him.

The judge should, prepare a code of procedure to be approved by the minister, which should conform generally to that of the United States courts, and as simple as possible.

Clerks and marshals should receive small,

if any, additional compensation.

The science of "squeeze" has been brought to perfection in China and the underlings of foreign officialdom soon learn how to apply the lever for all it is worth for their own benefit. The crying need is for a judge and the entire additional expense would not exceed \$10,000 per annum if the useless appendages are eliminated. The judge alone is the only necessary requisite and would satisfy the Americans in China and adequately protect all personal and property interests. Fees-that constant source of graft and peculation-should all go to the government, as these minor officials are by no means overworked or underpaid. The judge should be a man of mature years, or learning, character, judicial temperament and established reputation. Give Americans out here this and these citizens in the Far East will feel as if they are not entirely ignored or forgotten by their own country-and to this they all feel they are entitled.



CREW LEAVING SULLY SHORTLY AFTER SHE STRANDED.

## NOVEL ENGINEERING EFFORT TO SALVE THE FRENCH CRUISER "SULLY"

(Concluded from page 139.)

EXTENT OF THE DAMAGE.—An examination of the stranded cruiser was subsequently made by divers who found that the hull had been cut open as if by scissors by numerous sharp points of the reef. There were two holes in the fore part, the chief rent being some 32 meters long and 25 centimeters wide, and was believed to continue within the inner skin. There was a fear at first of the cruiser capsizing, but later there was a greater fear of her breaking up as she was suspended amidships with a rent some 90 ft long in her bottom, the rock on which she was lying being only 75 ft. in length, while at the end she was overhung for a length of 174 ft. with nothing for support. Admiral Bayle realized the precarious position of the cruiser and ordered everything possible to be removed from her. The workmen were engaged in unbolting armour-plates from the cupolas and the turrets of the guns, of from 104 to 164.7 mm. In the 'tween-decks the greater part of the guns were quickly removed from the casemates. Coal was taken out of the bunkers, and everything possible done to lighten the ship. Meanwhile a large quantity of bricks and cement with which to patch up the hull of the disabled cruiser were transported to the scene of the operations, as well as a large quantity of timber.

HONGKONG SALVAGE SYNDICATE.—Admiral Bayle engaged the services of the Hongkong Salvage Syndicate to help him raise Sully. Negotiations resulted in an agreement that 2,500 francs a day should be paid to the company until the floating of the ship, which, it was then expected, would be completed in fifteen days, while the whole job was reckoned to cost at something like 1,000,000 francs to her final flotation, this including towing to Hongkong where the repairs in dock were estimated to take at least six weeks. No time was lost in arranging about salvage operations, and on February 16th it was announced that the steamer Hanoi had been chartered by the Hongkong Salvage Syndicate who had secured the contract to salve the cruiser, and which left Hongkong that day with a surveying party, under Mr. J. Watt Jameson, for the purpose of making a preliminary inspection of Sully in order to determine the chances of salving the vessel, and deciding what course to pursue. On February 25th Hanoi returned to Hongkong for the purpose of obtaining further salvage gear, with supplies, and more men to do the diving and coolie work. Although bad weather was experienced the salvage party was enabled to get aboard Sully and examine her, and it ascertained that in consequence of the removal of so much of her armaments, gear, etc., the ship had considerably lightened and the salvage party did not anticipate that she would sustain any further damage, by bumping and grounding as was at first feared.

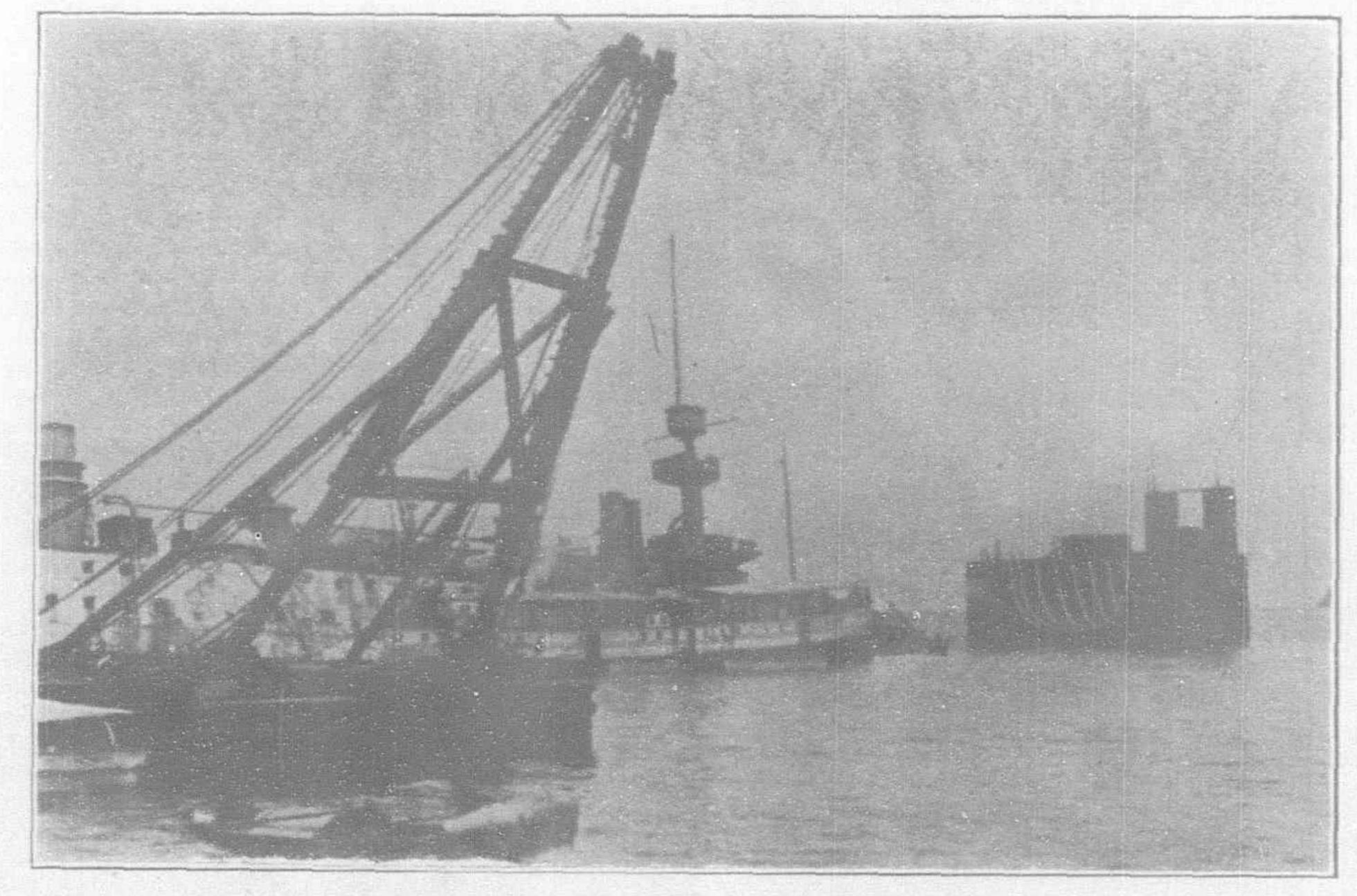
Despite every effort made the water in the forward part of the cruiser did not abate, and it was said that the leak was in such a position in the overhanging forward part of the vessel that with the water deep on the outside and several feet inside it could not be got at to be patched up. The operations had one beneficial effect, however, for they kept the vessel at an uniform weight, and so obviated in great measure the risk of her breaking up by grinding heavily on the rock on which she was perched. It was at this stage that Mr. Jameson retired from the operations, and on March 27th, Mr. W. C. Jack, of Messrs. E. C. Wilks & Co., took the matter in hand and proceeded on Hongkong to Along Bay to report on the position and condition of the vessel and on the possibilities there were of ultimately salving her.

NEW SYSTEM ADOPTED.—In the event of it being found in any way possible to refloat the ship it was the intention of those responsible for the salvage of the vessel to commence operations under an entirely new, and, it was hoped, an almost infallible system. It was decided to build a huge cofferdam of some 4,500 tons displacement in order to raise the bow of Sully, clear her of water and thus get her off the rock. The proposition was telegraphed to the Minister of Marine in France, and was approved by him, and the contract was duly signed on April 11th. On the 14th of that month Mr. W. C. Jack

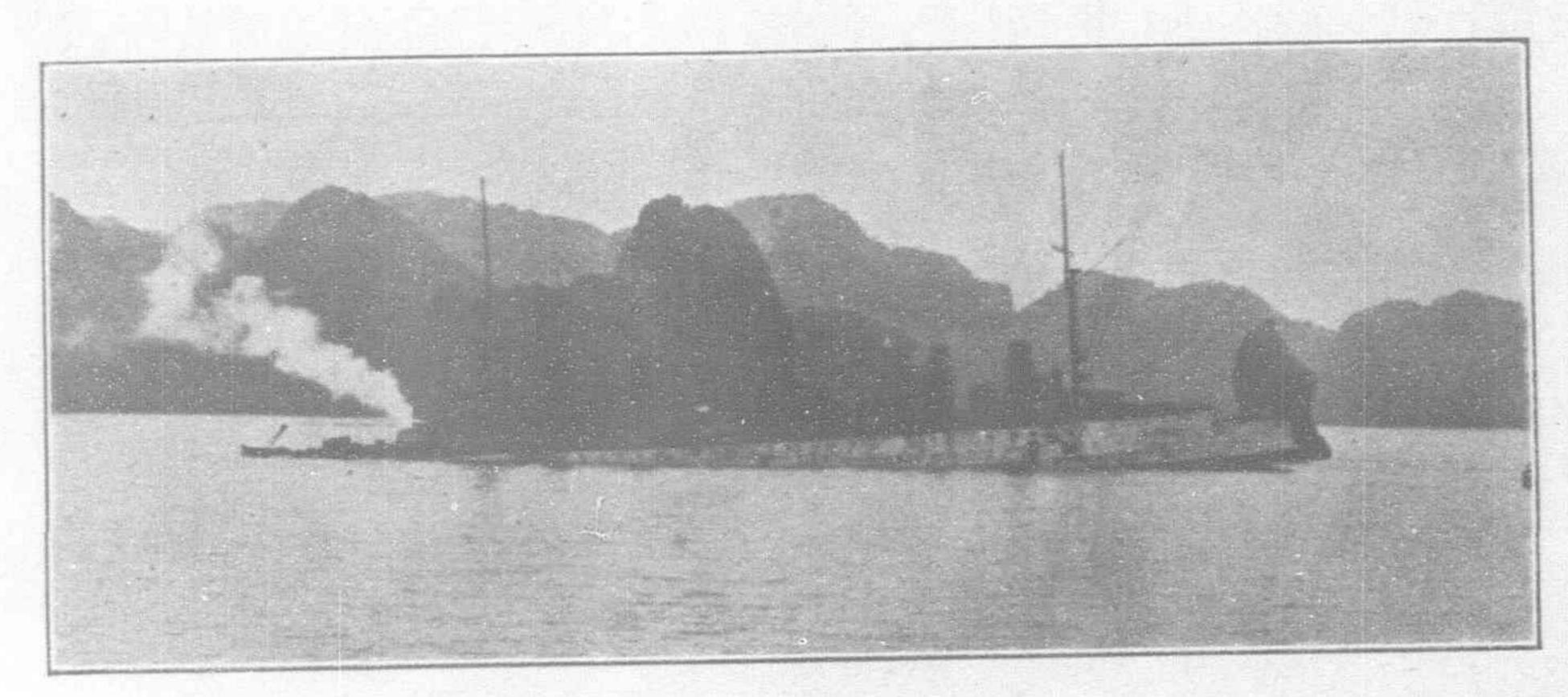
returned to Hongkong in company with M. Edmond, Chief Constructor of the French naval arsenal and dock at Saigon, to supervise the construction of the pontoon the work upon which had been commenced by the Hongkong and Whampoa Dock Company at its yard in Kowloon on the receipt of telegraphic instructions. The company's technical and operative staff continued hard at work, both at the design and structure of the pontoon and had the satisfaction of seeing successfully launched a most unique and creditable piece of work.

Cofferdam Described-A huge, unwieldy, coffin-shaped box cut in half, flat-ended, flat sided, and flat-bottomed-such was the first impression of the cofferdam as it lay on the slip. Rising to a height of 35 ft. and spanning 80 ft. at its broadest part, the cofferdam was by no means a beauty in appearance. Painted black all over, its funereal aspect was enhanced, and the strange uncouthness of the machine, or boat, or whatever it may be called, seemed to affect even the coolies who were working on the structure. It tapered from the 80 ft. end to about 40 ft. at what may be called the bows. It was more unshapely than a Chinese junk, and had none of the picturesqueness of the native craft. The bows were built up to a height of 35 ft., but the stern was open; it was a box with three sides only. At the open end the shape of Sully was hollowed out, gradually tapering away till at the bows of the cofferdam was the outline of the cruiser's bows. The idea, then, should be quite clear, even if the description is halting and vague. The cofferdam was to be towed to the Bay of Along, and worked under the cruiser until the bow of the vessel rested in the niche made for it in the cofferdam. Then the pumps were to be set in operation, and as the cofferdam rose, the fore part of Sully would rise with it, until the stranded cruiser was lifted clear off the rocks and slide once more into deep water.

Russian Officer's Suggestion.—The origin of the idea to construct a cofferdam forms an unusually piquant piece of modern history. It seems that the interned Russians at Kowloon have been following the efforts to refloat Sully with the greatest interest, so when it became known that the preliminary efforts of the salvage people to get the cruiser off the rocks had proved futile, a Russian officer at Kowloon came forward with his scheme. He produced plans of what might be termed an embryo cofferdam. So far as they went they were excellent-the idea was admirable. The more practical mind of an expert like Mr. W. C. Jack, who was assisted by M. Gaston Liebert, Consul for France at Hongkong, grasped the suggestion like shot. They saw the possibilities of the



COFFERDAM AND SHEERLEGS ALONGSIDE SULLY, THE FORMER READY TO BE PLACED IN POSITION. THESE SHEERLEGS COST THE FRENCH GOVERNMENT £1000, APART FROM THE BARGES UPON WHICH THEY WERE ERECTED.



LAST OF SULLY AFTER TYPHOON HAD BROKEN HER IN TWO. WHEN THIS PHOTO WAS TAKEN THE CRUISER WAS GRADUALLY SETTLING INTO DEEP WATER, THE COFFERDAM HAD BEEN DESTROYED AND FURTHER SALVING OPERATIONS WERE ABANDONED.

scheme and also that it required some modification here and a little elaboration there. Probably the cofferdam as it originally stood was utterly unlike the plan drawn by the Russian, but it expressed the outline of his originality.

LAUNCHING THE COFFERDAM.—The launching of the strange structure took place at the Kowloon Docks in the presence of the Hon. Sir Paul Chater, c.m.g., Chairman of the Hongkong and Whampoa Dock Company; Mr. W. B. Dixon, chief manager; Mr. W. Wilson, late manager of the Kowloon establishment, who has since taken over the chief managership vice Mr. · Dixon absent on leave; Mons. G. Liebert, Mr. W. C. Jack, Mr. E. C. Wilks, Captain Owen Wilks, several shareholders and others. There was no delay whatever in the cofferdam taking the water and subsequently being towed alongside the wharf for a final touching before her long sea-journey to the Tonkin Coast. Mr. William Barker, electrical engineer, who is in charge of the electric department of Messrs. E. C. Wilks' business, fitted up an electric lighting plant, which was taken down to facilitate the salvage work, and enable the salvage operators to work in any required position, either above or below water. Being built entirely of wood, with the exception of the strengthening iron plates necessary to prepare her to withstand all conditions of weather and the strain of the work before her, and being thus very buoyant, the cofferdam was loaded with heavy cables along the sides in order to submerge her, besides having her tanks filled, as would be necessary to "put her down" to the level of her decks, only the air-tanks remaining above water.

A TYPHOON.—The British Admiralty, who had shown a desire to assist the French Naval Administration in raising Sully, offered the services of a British naval boat to tow the cofferdam to the Bay of Along, but the structure was taken down by the dock company's tugboat Robert Cooke, and the powerful tug, Robert K., of the Atlantic, Gulf and Pacific Company. It arrived without mishap alongside the cruiser, and, shortly afterwards, on May 26th, an attempt was made to sink her beneath the stranded ship. But misfortune attended the effort and the huge structure capsized causing much additional work to be undertaken by the salvage experts, who, it should be said, had spared no pains to ensure success attending their mission, which for months past had been carried out in the face of great difficulties. The pontoon was again floated, and many improvements, necessitated by circumstances, having been effected on it, another attempt was to have been made at the end of August to sink it beneath the bows of Sully, which had already been raised several feet. Great hopes were entertained of refloating the cruiser, and just at the critical moment a typhoon swept over the bay doing irreparable damage to the pontoon. The falling barometer warned the salvage party of the storm, and every precaution was taken for Sully's safety. Nothing, however, could be done for the pontoon, and that unfortunately broke up and went practically to pieces, the debris,

consisting of spars, beams, deckplanks and so on making a disappointing show of flotsam all around, while at least three of the pumps, with pipes, pig iron and chains, used as ballast, were lost by sinking in the break-up.

LAST OF THE CRUISER .-- But these and many other mishaps notwithstanding, the salvage party believed that the ship could be got off the rock and successfully refloated, and to this end the crew visited Hongkong the first week in October and arrangements were made for shipping extra gear, dynamite and so on for blasting away the pinnacle on which the cruiser had for so long been balanced. The steamer Kongnam had been engaged in the operations in Along Bay for a long time, and after visiting Hongkong was to have returned to the scene of the wreck on Saturday, September 30th. In fact, she was on the point of starting when a telegram came from Mr. W. C Jack announcing that during the recent typhoon Sully had become a total wreck, while later news stated that the afterpart of the ship had sunk in deep water. The cruiser was broben in twain, and now half lies on the rock and the other half is in 10 fathoms of water. The loss entailed by the breaking up of the cruiser together with the cost of salvage operations will be enormous. It is announced that the wreck will be sold at public auction about a month hence. Experts say it is questionable if it will bring £500.

#### MAMMOTH STEAMER "DAKOTA"

The Great Northern Steamship Company's immense steamship Dakota, sister ship of Minnesota, arrived in Hongkong October 26th, on her maiden voyage to the Orient. She is under the command of Captain E. Francke, a well-known Pacific Ocean master. Dakota shares with her sister ship the distinction of being the largest vessels ever constructed in the Western Hemisphere, and Dakota, being a few tons larger than Minnesota, is the largest vessel that has ever visited an Oriental port. Her carrying capacity is almost as great as that of the largest Transatlantic freighters. From keel to pilot-house she has 11 decks, and in her immense hold she can carry an almost inconceivable quantity of bulk cargo. Whole trains, with locomotives, will be transported within her steel sides to Japan, China, and Korea, and in her 4 classes of passenger apartments are accommodations for a small army of travellers. Dakota's principal dimensions are:-Length 630 ft., breadth 731 ft., depth 56 ft., and gross tonnage 21,854 tons. She thus exceeds the gross tonnage of any other ship now in commission, the next in order being Cedric, length 700 ft., breadth 75 ft., depth 49 ft., and gross tonnage 21,400; and she will only be eclipsed by Kaiserin Auguste Victoria, 25,000 tons; and America 23,000 tons, now building.

Mr. Howard James, vice-president of the Great Northern Steamship Company, visited the Orient on this voyage of Dakota. At Hongkong he talked with a representative of the Hongkong Telegraph, and in the course of

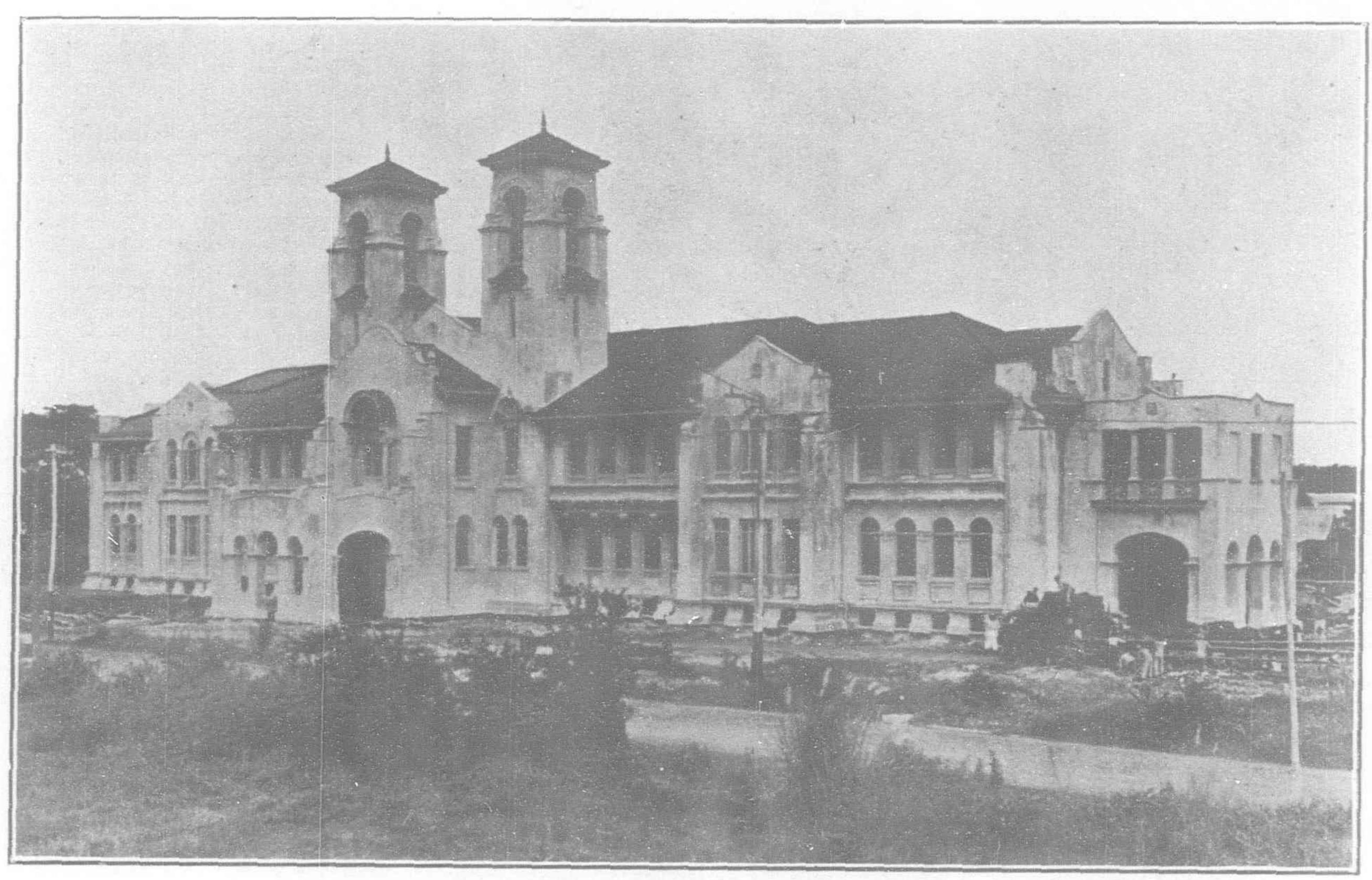
conversation said that on every trip from America the vessels of the company had been crammed with cargo. At present the cargoes from this end were not quite sufficient to fill the holds, but he was convinced that the vessels would soon be getting all the cargo they could take. Asked whether his company contemplated the construction of additional vessels for the run to the Orient, Mr. James replied that the Great Northern was content with the ships it had. There was no scheme in hand to build new vessels. Mr. James said his trip to the Orient was only in the nature of a holiday, and on the subject of the steamer Dakota he was exceedingly enthusiastic. He personally conducted the representative of the Hongkong Telegraph over the vessel, and according to that paper the staterooms certainly are magnificent. The cabins are furnished luxuriously, provision being made for the circulation of hot air and the withdrawal of vitiated air. One feature alone shows how the Great Northern has endeavored to provide for the comfort and convenience of their passengers. Inside each bunk, at the head of each bed, there is an electric light, so that passengers can lie reading in bed. Everybody knows how uncomfortable, or rather how impossible it is to attempt to read in bed on the old-fashioned boats. On Dakota it is recognized that people do like to read a chapter before turning off to sleep, and accordingly the lamp is there for them. The first-class staterooms remind one of a suite in a first-class hotel. There is nothing to show that the passenger is on board ship, except the windows. The rooms are furnished like a hotel, the bed and appointments would be considered suitable at any first-class hotel, and the private sitting-room, reading-room, and bath-room are thoroughly up-to-date.

The steamer Dakota will sail from Hongkong January 27th, 1906, for Seattle, via Shanghai, Nagasaki, Kobe, and Yokohama, while Minnesota will sail from Hongkong, December 19th, for Seattle via the same Oriental ports. Messrs. Smith, Bell & Co. are the Manila agents for the Great Northern Steamship Company.

## MINING IN CHANGSHA PROVINCE, CHINA

There has been little or no advance in the mining development of this rich province during the last 18 mos. The official bureau of mines, or Kuang Wu Chu, has relinquished its control of the whole province, according to a consular report, and now directs only three mines, viz., those at Ping-chiang, Hsin-hua, and Shuik'ou-shan. The rest of the province has been allotted to three "gentry" companies, the directors of which are officially appointed, but the basis is essentially commercial. All mining concessions must be sought from these companies. As a matter of fact, it is not intended to grant concessions if it can be avoided; but it is to be hoped that foreign skilled advice and supervision will be obtained, otherwise the outlook for the investor is poor. From an interesting report prepared for the Imperial commissioner, Tieh Liang, no less a sum than Tls.2,000,000 have been expended in mining enterprises during the past 10 yrs., nearly all provided by the provincial treasury. Various mining centers have, however, been successively shut down, owing to the ruinous losses experienced, and only one mine (lead and zinc) has been in any way remunerative. British enterprise, except that represented by two shipping firms with a steamer each and a Chinese agency, is at present not in evidence. There are rumors, however, that two companies have been promoted in London to operate certain mines, in conjunction with Chinese; but nothing definite has so far resulted. German firms have been in touch with Hunan for several years and contracts for the delivery of ores are still running. Two representatives of an important European company have been in residence for a year endeavoring to secure business. The Japanese are well alive to the possibilities of the provincetheir representatives are everywhere. The P'inghsiang coal mines turn out, it is said, some 1,000 tons of coal a day; part of this, made into coke, is used in the various government works in Hupeh and elsewhere and some is sold in the Hankow market

## LABORATORIES OF THE BUREAU OF SCIENCE, PHILIPPINE GOVERNMENT



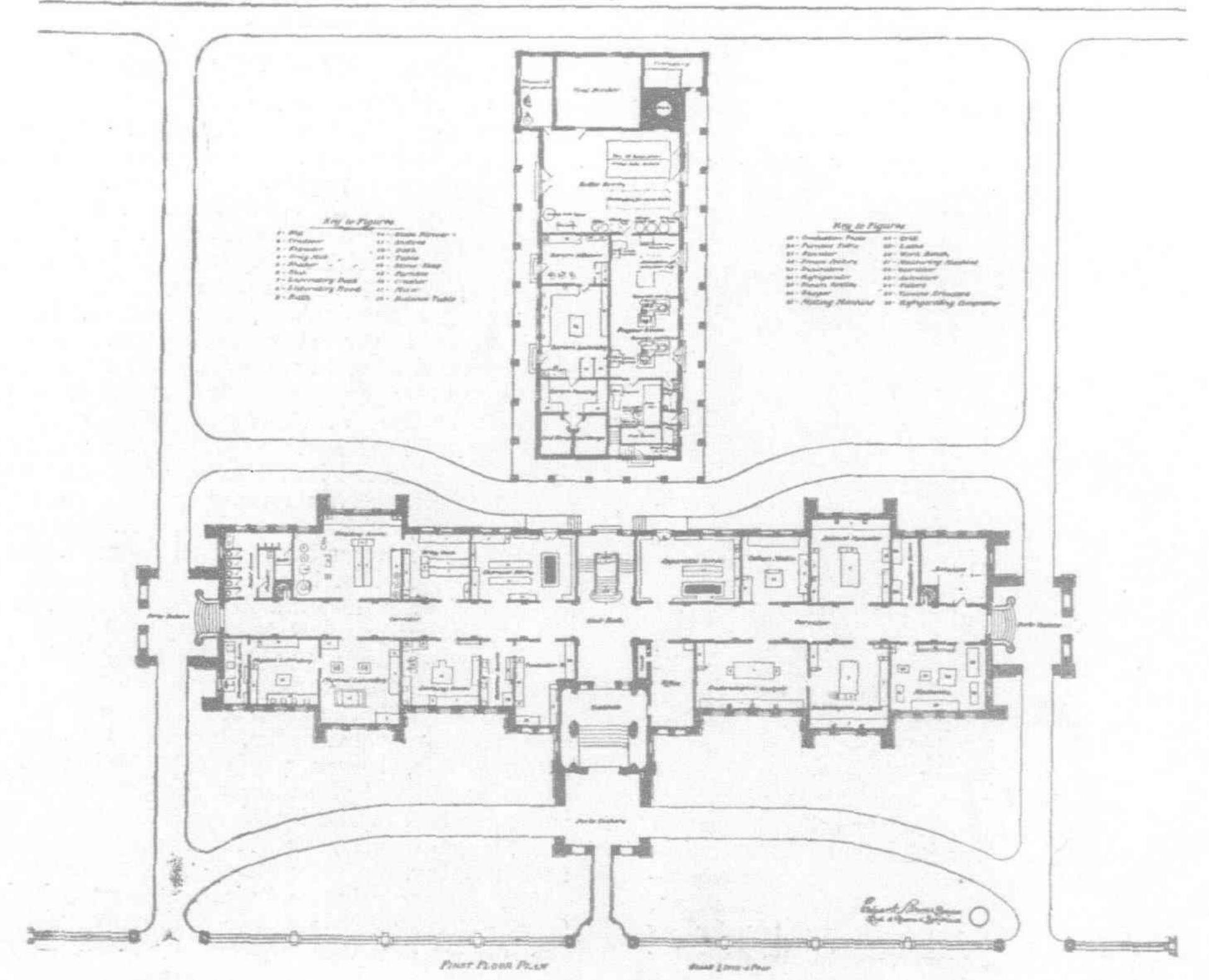
FRONT ELEVATION OF THE LABORATORY BUILDING.

In his introductory remarks to a description of the construction and equipment of the new laboratory buildings of the Bureau of Science (fomerly the Bureau of Government Laboratories), only recently completed in Manila and occupied, Paul C. Freer, M. D., Ph. D., founder and director of this important adjunct of the Philippine Government, has the following to say about the scientific laboratory and its relation to the Tropics:—

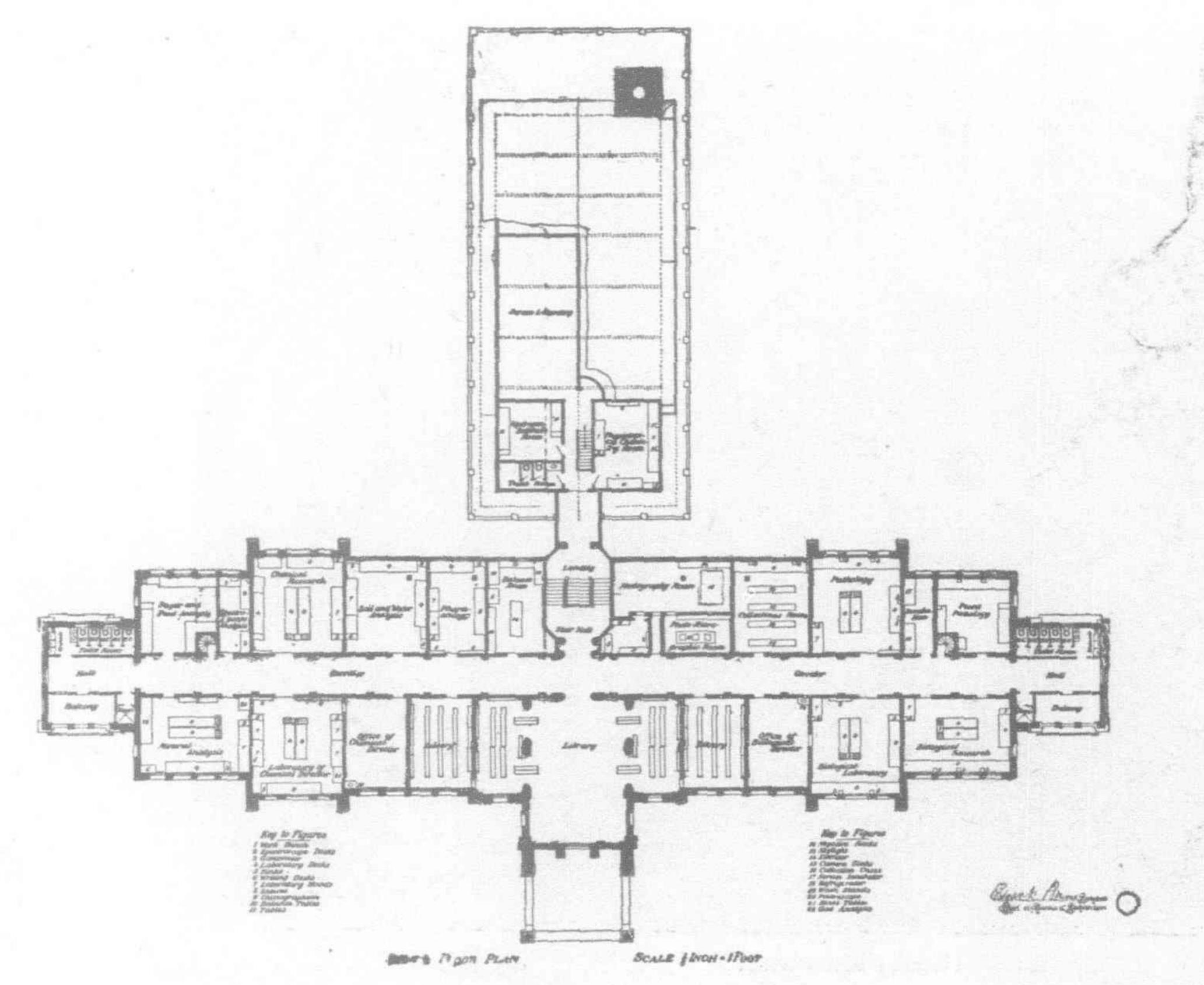
"Tropical countries which are subject to colonization by the white races present conditions which are such that the settlers are continually exposed to infectious diseases, differing from those prevalent in colder regions, and, owing to the fact that the European races in these countries have been moved from their native soil they are exposed to greater dangers than the native population, which have become accustomed to the surroundings. However, it is true that the natives contract the same class of diseases and are subject, though perhaps in a lesser degree, to the same dangers. Tropical localities are especially prone to the occurrence of serious epidemics both of man and of animals. In all such countries the native population regard the causes of the sicknesses which afflict them from a standpoint entirely different from that of the educated white man. Superstition and imperfect education leads them to disbelieve in measures which the modern scientific world has recognized as necessary. For this reason, health boards, modeled more or less after those of the mother countries but modified as to their powers and duties in order to meet existing conditions, have been deemed essential in all tropical colonies, but their work to a very great extent would be imperfect, haphazard, and unsuccessful if the methods of prophylaxis were not guided and sustained by a scientific knowledge of the causation of disease and by accurate diagnoses of the exact nature of the infections which are encountered. From a material standpoint, the damage to commerce caused by epidemics of cholera, plague, rinderpest, and surra is such that the loss where these diseases gain a foothold by far outweighs the cost of any measures of prevention, however expensive. For the purpose of diagnosis and

for the further study of methods of prophylaxis and cure, a biological laboratory, properly equipped, is an essential. The work is of so difficult a nature, so important, and, if imperfect methods are used, so subject to error that a poor equipment both in the literature of medical biology and in apparatus would be the precursor of failure. The appliances must be of the best, the literature on all branches of the work must be at hand, and the bacteriologists performing the diagnoses must have

a thorough and complete training. However, bacteriological laboratories in the Tropics must not confine themselves to subjects of diagnosis—they must also be expected to make advances by research on special subjects of importance, and they must continually enlarge their field by the observation of interesting or new diseases which may come to their attention, because it can never be predicted that an apparently harmless malady which is imperfectly known may not eventually assume



FIRST FLOOR PLAN.



SECOND FLOOR PLAN.

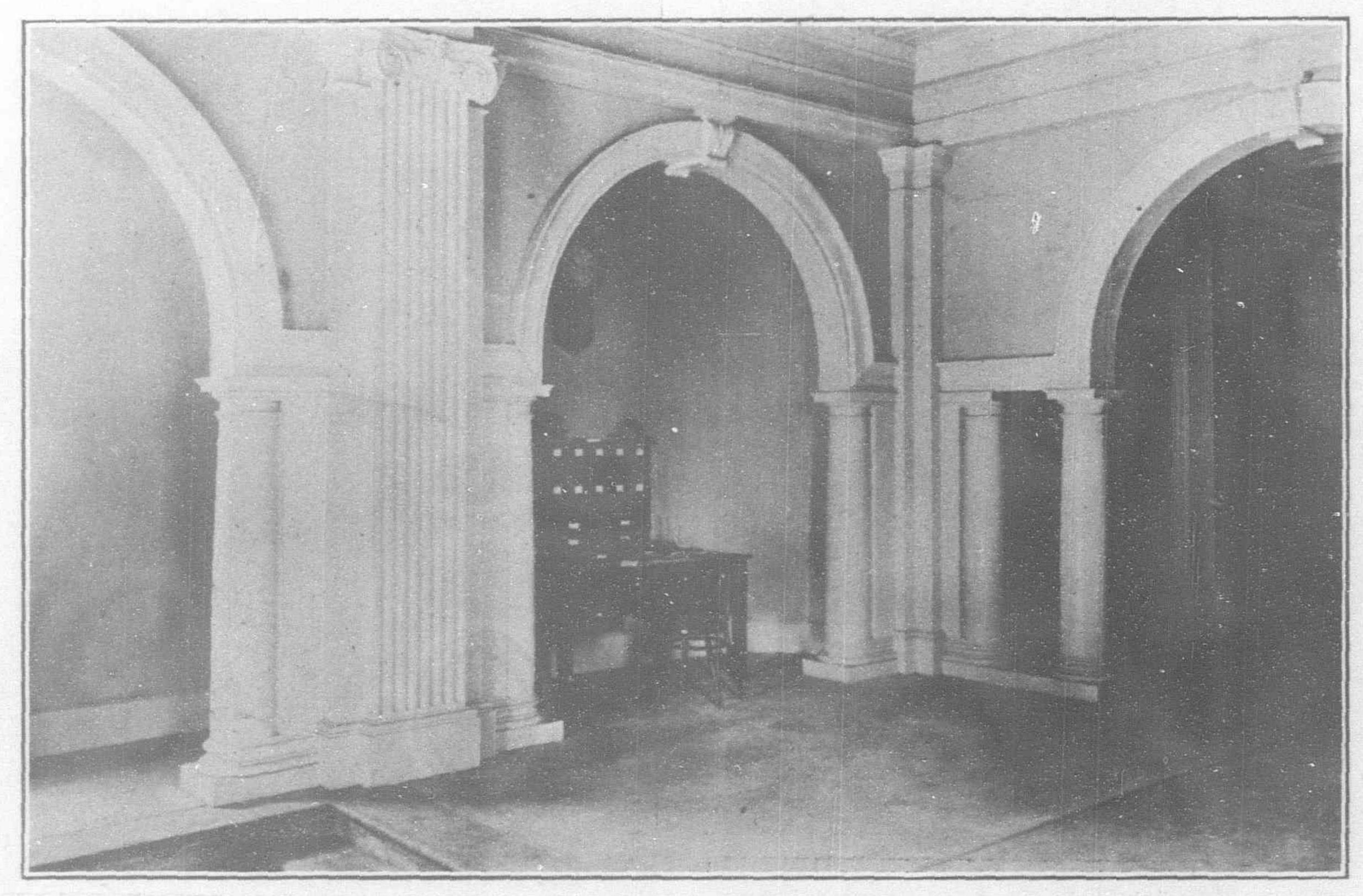
serious proportions. In so doing the laboratories can guard the public by timely warnings. Each tropical colony presents different conditions, different phases of the same disease, and even new and unknown infections. The prevention of the spread of any disease must presuppose a perfect knowledge of its etiology and of the other factors which enter into its prevention and treatment, and such knowledge can only be gained by an investigation of the subject based upon a study of the literature and supplemented by new investigations in the laboratory. Research in the field outlined above demands the highest type of trained

investigators, a complete library, and exceptional facilities. The value of this class of work is so universally recognized that governments in the past have organized expensive expeditions to tropical countries for the purpose of increasing the world's knowledge of the diseases peculiar to those regions. However, such expeditions can not possibly carry with them all the materials for their work without encountering great difficulties which rob them both of time and opportunity, and their results would be far more beneficial if they could come to permanent stations.

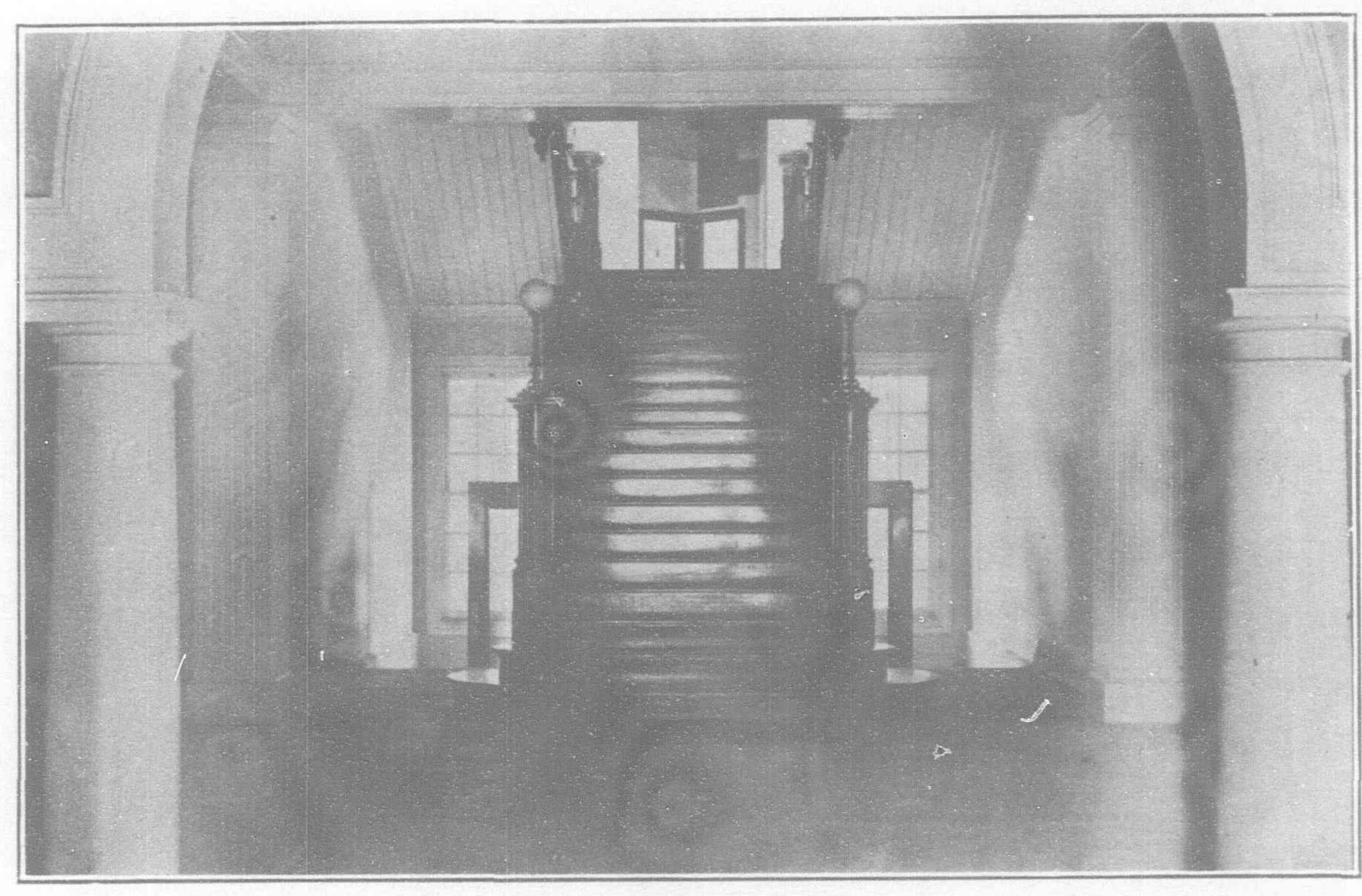
"For a properly equipped biological labor-

atory there are necessary not only adequate rooms, well lighted without direct sunlight, but also apparatus such as microscopes, incubators, sterilizers, microtomes, surgical instruments, glassware of all kinds, stains, chemicals, and small animals. The latter, such as guinea pigs, rabbits, monkeys, goats, and dogs, are as much a portion of the laboratory reagents as are the culture media in which the bacteria grow or the microscopes through which they are seen.

"Tropical colonies are also of necessity regions the prosperity of which depends upon agriculture, upon an exploitation of the natural products, upon mining interests, and the means for the barter and sale of raw products. They can not under present conditions, or presumably even in the remote future, become manufacturing centers excepting for products closely related to their chief staples. It is a fact that the interior of many of these countries is but little known, that the products are gathered by persons ignorant of their true uses and values, that in many cases they are allowed to go to waste for want of a proper knowledge, and that in others the exploitation is desultory and imperfect. Some phases of tropical agriculture are fairly well advanced; among these may be mentioned the culture of the cocoanut, of hemp, rice, etc., but when it comes to articles of a different character, which are obtained from the forests or mines, it is found that much uncertainty exists. Gums and resins, which are supposed to be of but little value to the natives and which they may use for fuel or for lighting purposes, may, on distillation, produce substances of far higher commercial value. Medicinal plants may exist in large numbers with qualities unknown or imperfectly known to the people, but containing alkaloids and other materials which if properly investigated would be readily marketable at high prices. New fields of enterprise, based upon knowledge secured in other countries, may also be introduced. In order to gain advantages not heretofore obtained in the conservation and exploitation of natural products or of those introduced for the purposes of culture, bureaus of forestry, agriculture, and mines and commercial museums have been established, but all of these need the assistance, advice, and research work of laboratories to answer questions as to the nature of soils and minerals, the value of ores, the uses and compo-



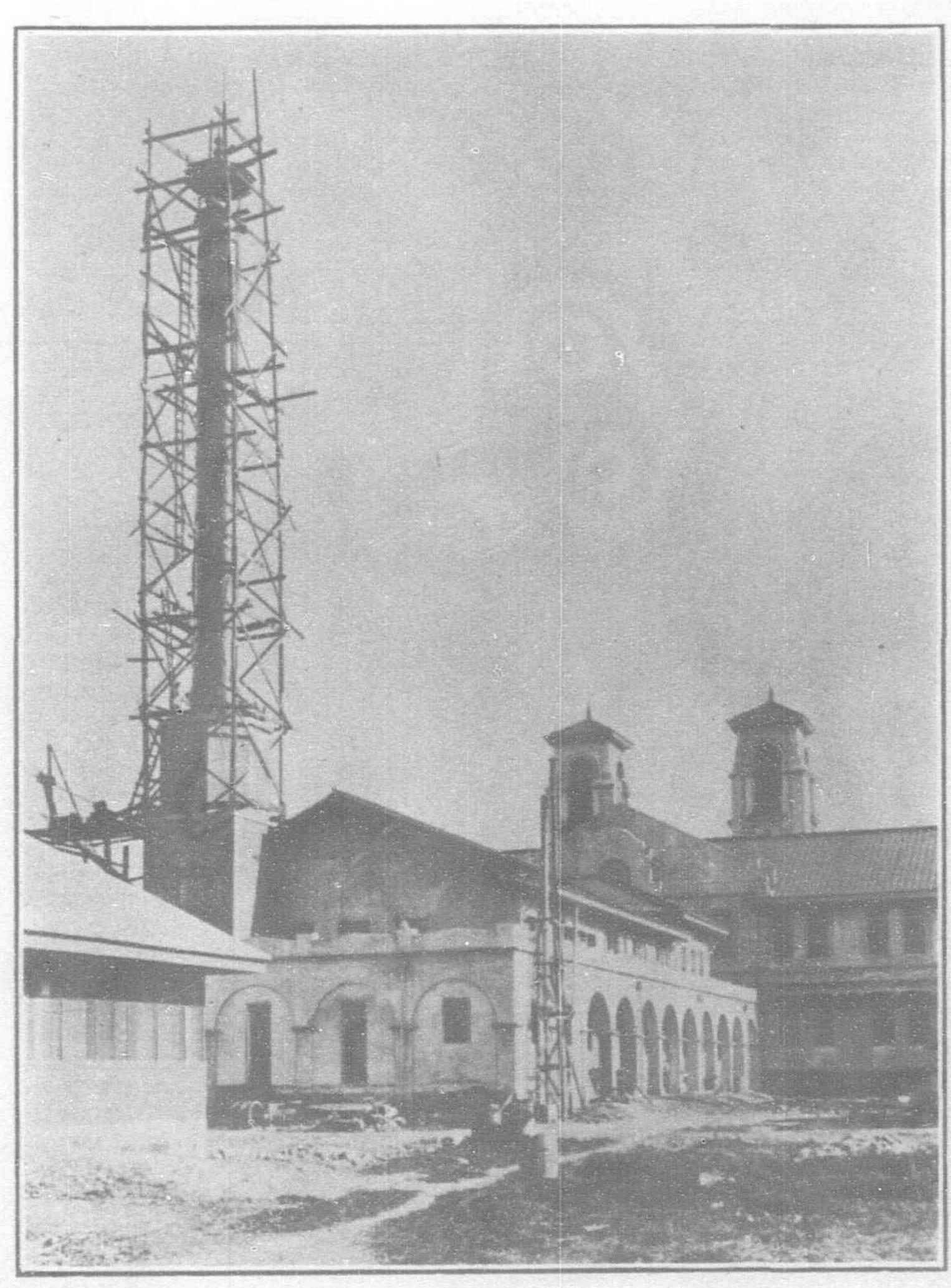
MAIN ENTRANCE.



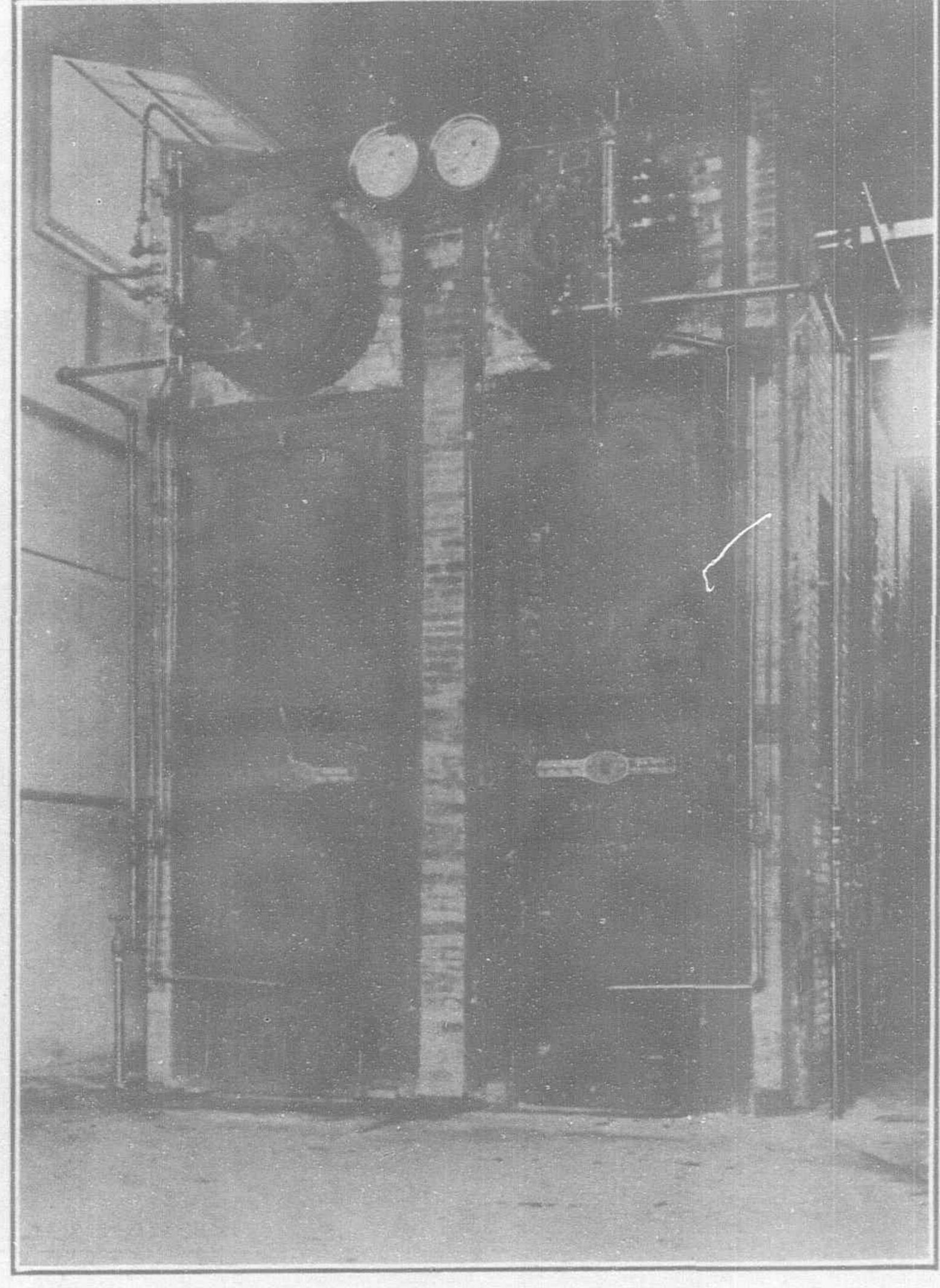
MAIN (FRONT) STAIRWAY.

sition of oils, gums, resins, and medicinal plants, and without such assistance the value of their work would be but a fraction of what it is. "For the purposes of study of the subjects mentioned above a necessity exists for a laboratory of chemistry and for facilities to pursue

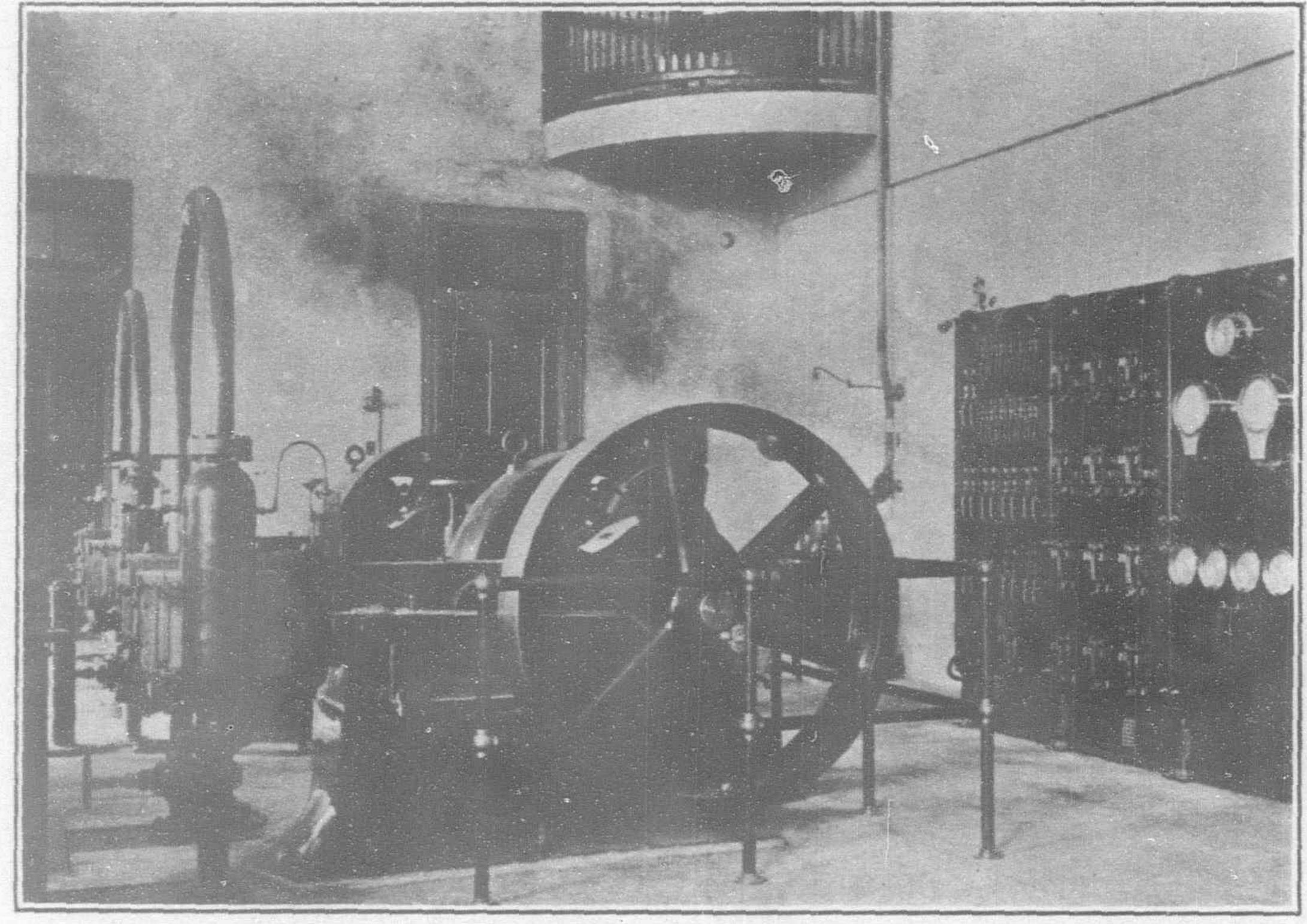
and complete accurate researches on the materials which can be obtained. In the Tropics, as well as in other countries, the question of



REAR VIEW SHOWING THE SERUM LABORATORY POWER HOUSE AND STACK.



BATTERY OF BABCOCK & WILCOX BOILERS.



CORNER OF THE ENGINE ROOM.

the character of the foods and drinks, the analysis of imported products which too frequently are adulterated, the determination of values for customs duties, the testing of the strength of cements, the assaying of ores, and the performance of other analytical work are necessary, and, as these regions are not supplied with universities, analytical laboratories must be provided in charge of the various governments.

"As the people depend upon products of the field and of the forests for so large a proportion of their sustenance and barter, a knowledge of the flora of the Tropics is essential, from both a scientific and a material standpoint. It is necessary to be able to identify plants which have once been encountered in order to understand something of their distribution and general importance, to study their growth, the conditions necessary for their best development, and their diseases. Bureaus of forestry and agriculture must depend upon botanical work to assist them in their duties. The chemist, in investigating plant products, needs an identification of the plants from which the latter come. For these reasons botanical work becomes as essential as that in any other laboratory field.

"Tropical countries are, par excellence, those in which insect pests are most frequent and widely distributed, so that the means for the study of entomology, facilities for classifying the material gathered, and for ascertaining the nature of the insects most dangerous to valuable flora should be at hand, and this need must be met by the employment of entomologists and by providing space for their work.

"Modern methods for the treatment of disease have become more and more dependent upon serum therapy. The results obtained with rinderpest in South Africa and in India, with plague prophylactic in Japan, with cholera prophylactic in India and Japan, and the necessity for vaccination against smallpox, at once suggest the establishment of serum laboratories in tropical countries. Because serums are perishable they can not very successfully be shipped through long distances, and many of the tropical diseases which yield either to serum prophylaxis or therapy are of such a nature that the serums themselves can not be prepared except on the spot.

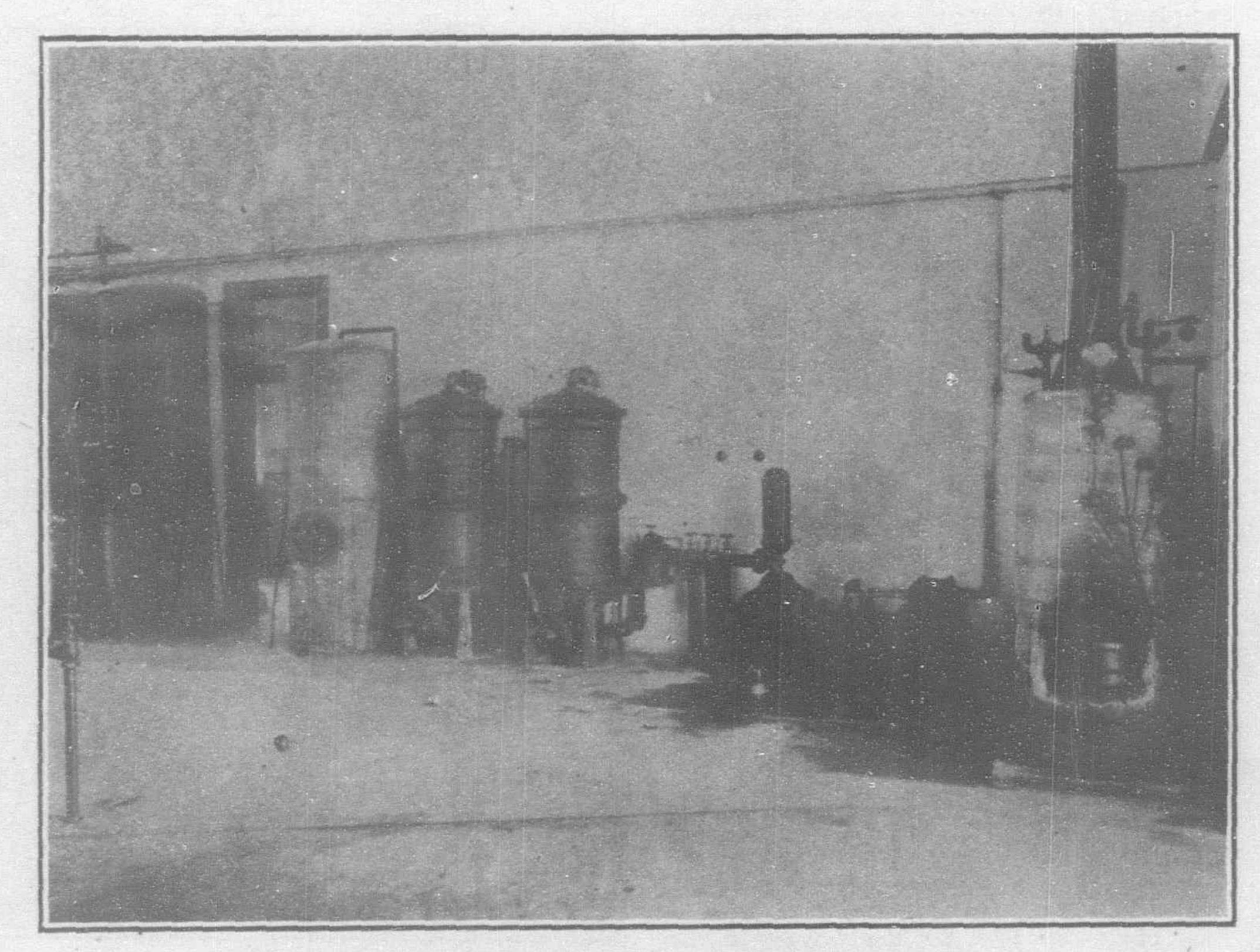
"Other branches of laboratory work readily suggest themselves as being equally essential to the proper development of colonial enterprise. One of these would be a study of the

fauna of the regions in question, both marine and terrestrial. A laboratory for zoology and marine biology would be entitled to equal rank with the others mentioned above.

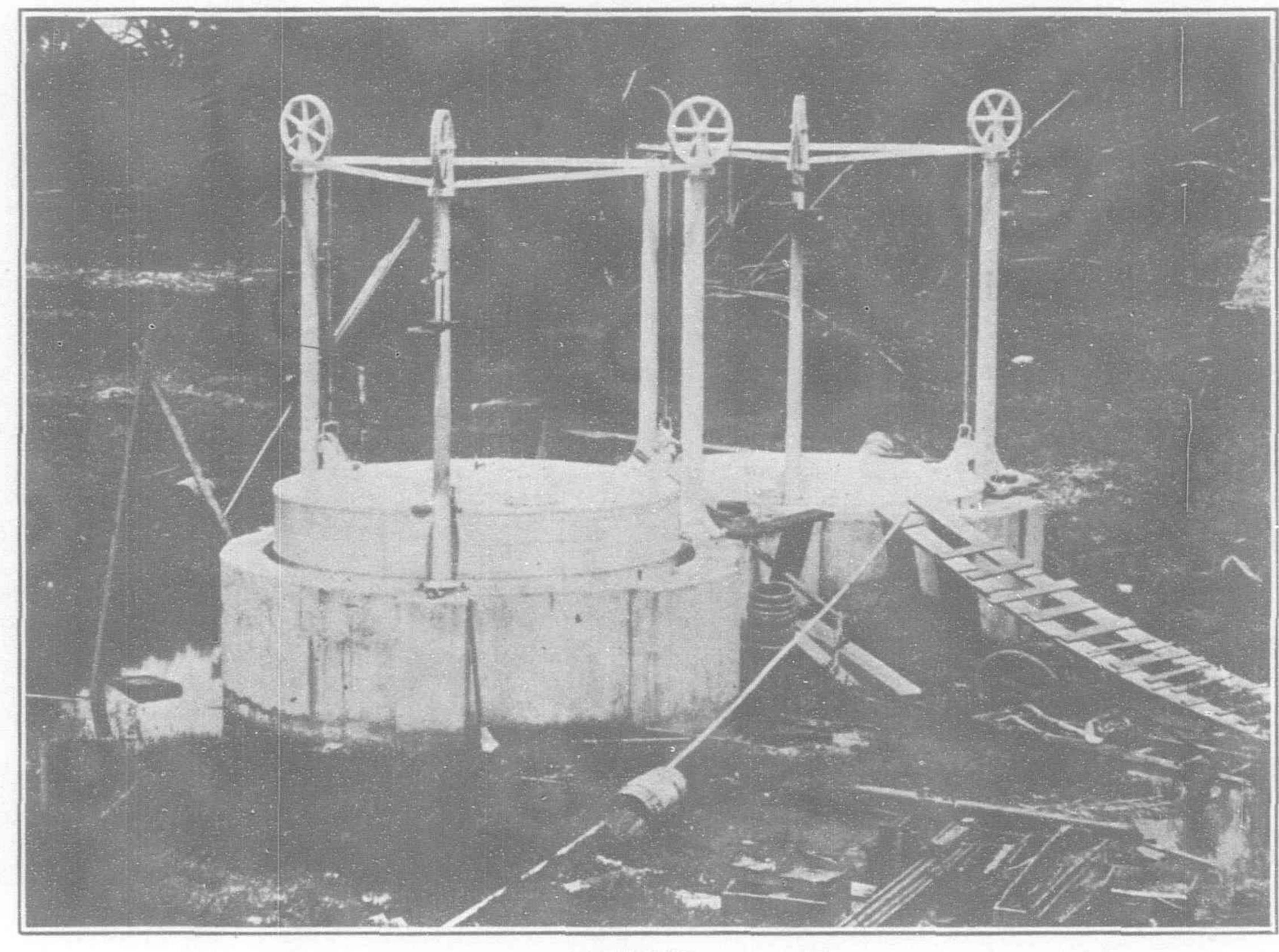
"A government in beginning its work can adopt one of two lines of action. It may either allow its various divisions which come in contact with and which need scientific aid themselves to establish the various laboratories in question, each under separate direction and each with separate facilities, or it may adopt the course of inaugurating one central institution where all this class of work can be united, where, therefore, the workers can be in close contact, and where each division is well aware of what is being done in the others. Cooper-

ation in this sense would be most complete, and while there might be some slight disadvantages in the latter course by reason of the fact that the various divisions of the government could not in their own quarters study and obtain the results looked for, these are by far outweighed by the cooperation which can be obtained between the scientific men by the division of labor, which frequently saves both time and money, and by the reduction in equipment, which inevitably follows a concentration of allied interests."

Location and Plan of the Buildings.— The Civil Government of the Philippine Islands, taking all of the above-mentioned facts into consideration, and knowing well the expense



CORNER OF THE BOILER ROOM SHOWING FIRE PUMP, FILTERS, ETC.



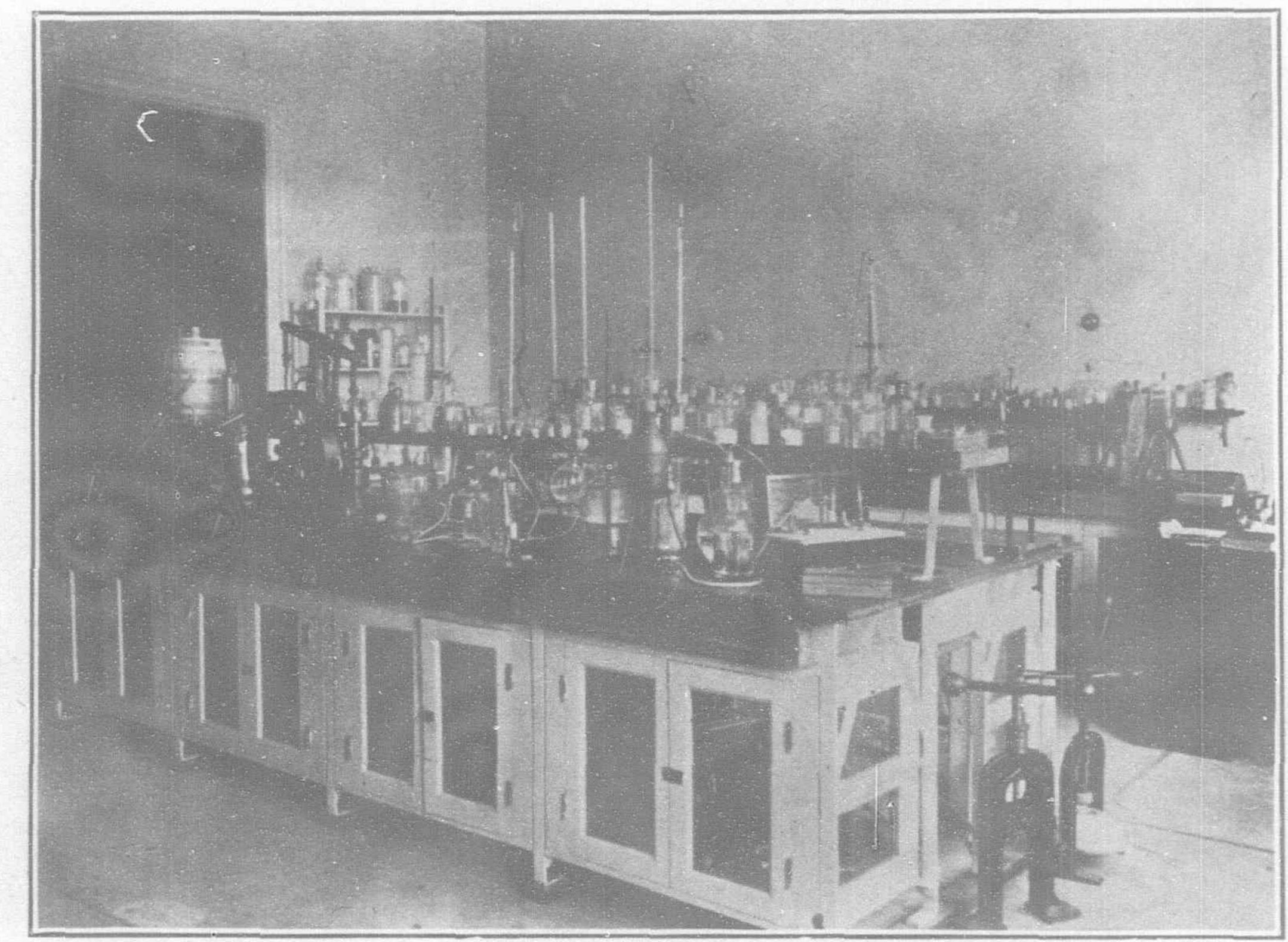
GAS TANKS.

and loss of efficiency due to a scattering of its scientific energies through a number of bureaus, decided to establish one central laboratory system, to properly equip and house this series of institutions, and to place them under a central direction. The result is the new government laboratories which now occupy a commanding site on the old exposition grounds between Calle Herran and Calle Padre Faura in the city of Manila. The buildings are divided into a main laboratory structure, facing toward the S. and divided into two symmetrical portions, the one on the E. for the biological and the one on the W. for the chemical laboratory. The power house was placed to the rear and connected with the main structure by means of a corridor, and in addition to the space for the boilers and engines it provides room for the serum laboratory.

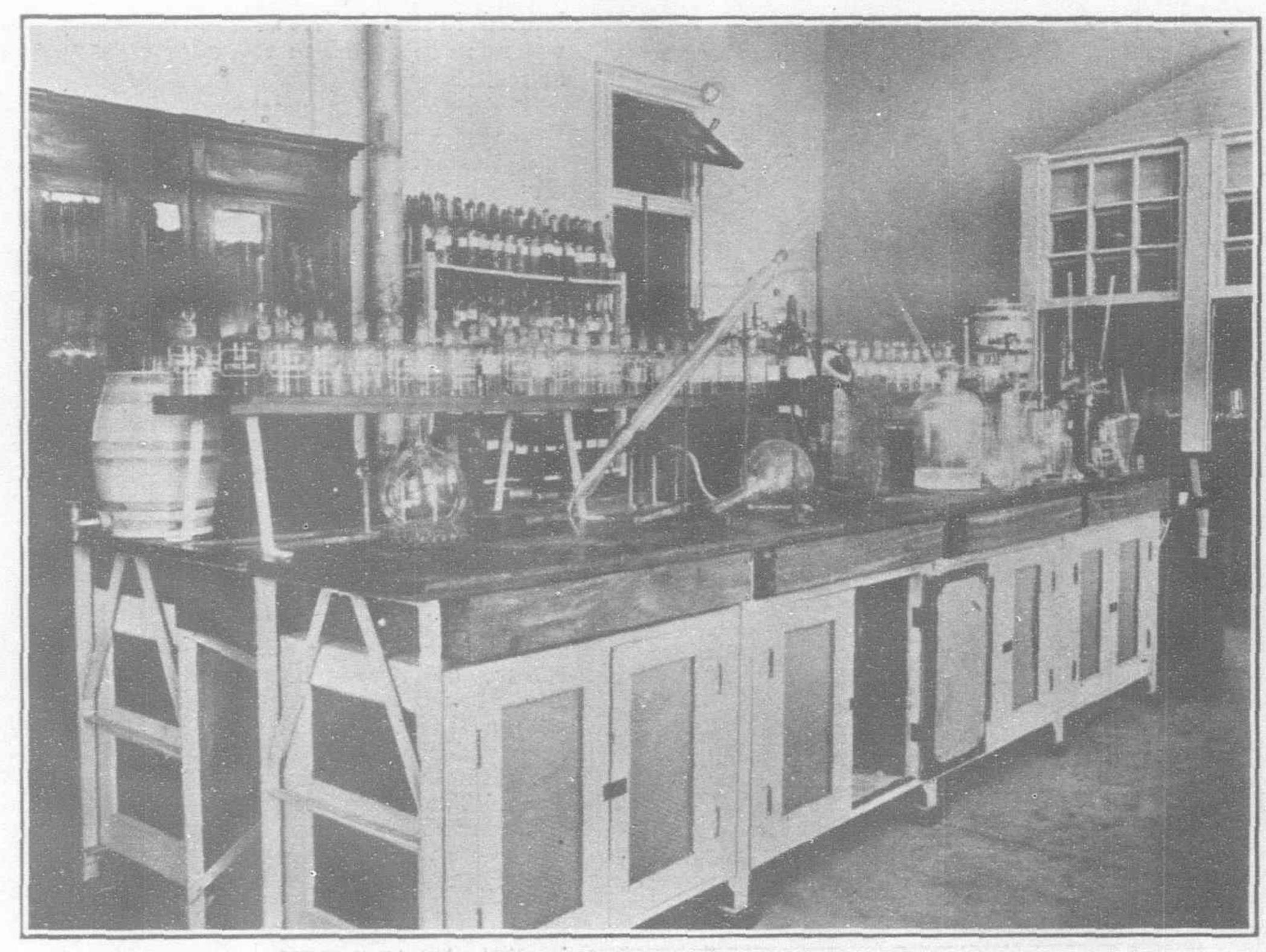
The whole structure, therefore, is in the form of the letter T, that portion of it in which biological and chemical work is carried on being so planned as to give the minimum of direct sunlight—a great desideratum for microscopic work. Bisecting the main structure lengthwise are three corridors to ft. wide and 236 ft. long, the one in the foundation being for the purpose of giving access to all the pipes leading from the power house and to provide space for the storage battery. The two upper hallways are the main passageways of the building and all of the rooms open on them. The eastern half of the structure is devoted to biological work with the exception of the space occupied by one room (No. 10) for storage of apparatus and another for offices (No. 13). Passing through the main entrance and turning to the right, the disposition of the rooms is as follows: No. 12 for the preparation of culture media for biological work, No. 14 for botanical work, No. 18 as a storehouse for botanical duplicates, No. 19 a mechanic's room, Nos. 17 and 15 for bacteriologic diagnosis and research. On the upper floor in the same order No. 116 is for the photographer, No. 118 for the pathological museum, No. 120 for pathological work and research, No. 122 for incubators and refrigerators, No. 124 for entomological work, No. 121 an outdoor laboratory for the entomologists, No. 119 a laboratory room for bacteriological and pathological research, No. 117 for biological research, and No. 115 as an office for the director of the biological laboratory. Turning to the left

from the entranceway on the ground floor, room No. 8 is for the storage of chemicals and apparatus; No. 6 as a laboratory for organic chemistry in connection with drugs, medicinal plants, and natural products; No. 4 for a commercial laboratory in chemistry, with the machinery for carrying on commercial processes on a laboratory scale; No. 1 for photometric work; No. 3 for physical chemistry and physics; No. 5 for the same purposes and for the adjustment of weights and measures; No. 7 for assaying and mineral work; No. 9 for a balance room, and No. 11 for organic combustion. On the second floor and in the same order No. 114 is the balance room for the upper floor; No. 112

for the use of the ornithologist; No. 110 is a chemical laboratory fitted for work with soils, water, and organic chemistry; No. 108 a chemical laboratory fitted for all classes of work; No. 106 for spectroscopes and instruments of precision; No. 104 for sugar, foods, and physiological chemistry; No. 103 for mineral analysis; No. 105 for general chemical work of all classes, and No. 107 as an office for the superintendent of government laboratories. The three central rooms to the front— Nos. 109, 111, and 113— are for the purposes of the library, Nos. 109 and 113 being stack rooms and No. 111 the reading room, stack room, librarian's office, and general library. Passing



TYPE OF ROOM IN THE CHEMICAL LABORATORY.



ROOM IN THE CHEMICAL LABORATORY SHOWING TYPE OF CENTRAL DESK.

to the rear on the ground floor and turning to the left in the power house, Nos. 50 and 51 are for cold storage, No. 52 for the packing and shipping of vaccine and serums, No. 53 for the preparation of serums, No. 54 as a room for the preparation of culture media for the serum laboratory, No. 55 as a boiler room, No. 56 for the gas-plant generators, No. 57 for coal, No. 58 for a crematory, No. 59 for the engine room, and No. 60 for cold-storage machinery. No. 153 is the office of the director of the serum laboratory and Nos. 150 and 152 are laboratories for bacteriological and pathological work of the serum laboratory. To the rear of the entire structure are placed the animal houses, including buildings for the storing of guinea pigs and rabbits, with a wing for work on bubonic plague and contagious diseases; a stable for the serum horses, one for the vaccine calves, and one for the storing of monkeys, dogs, and goats. The list given above completes a statement of the purposes for which the rooms were originally intended, but the detailed description which will be given below makes it evident that the building is really so constructed as to give it great elasticity in the class of work which can be conducted therein and in providing for a large increase in the number of workers.

POWER EQUIPMENT.—The boiler-room equipment consists of two 75 h. p. Babcock & Wilcox steel sectional boilers set in one battery and designed for a working pressure of 150 lbs. per sq. in. Steam is led from the boilers through 4-in. copper-expansion bends to an 8-in. extraheavy steel-pipe header, from which a 7-in. steam main drops to the pipe subway. The engine supplies are 3-in, copper pipes tapped into the 7-in, main and carried into the engine room below the floor line, from where they are carried up to the cylinders by expansion bends of 4-ft. 4-in. radius. The exhaust main is 8-in. standard pipe, and passes through a 200 h. p. Wainwright even-flow feed-water heater, which is placed in the subway, and from the latter it passes through the boiler room to the atmosphere, being fitted with a 24 by 30 in. bent exhaust head. The main steam and exhaust lines are drained by two Bundy return-steam traps discharging into a feed-suction tank located in the subway.

The flue gases from the boiler are led through a sheet-steel smoke header to the main smoke-stack, which is of 48-in, internal diameter and 103 ft. high. A damper is fitted into the smoke header which is automatically controlled by

a Locke hydraulic damper regulator. A 24 by 60 in. vertical auxiliary boiler, with a Deane 3\frac{1}{4} by 4 in. duplex steam pump, is installed for general water service during periods when the main boilers are shut down. The feed water for the main boilers passes through a Loomis-Manning Type H pressure filter, which discharges into a filter tank having a capacity of 500 galls., from which it is carried to two 11½ in. Metropolitan double-tube injectors fitted to the main boilers, the auxiliary boiler and pump, and to the main feed pump, which is of the Deane triplex single-acting type, with cylinders 4 by 4 in, geared to a Stow multispeed motor. The pump and motor are located in the pipe subway, and receive water

from the steam traps and cylinder jackets of the air compressor, vacuum pump, and ice machine, as well as from the filter tanks.

The fire pump is of the Deane duplex insideplunger pattern, 7½ by 4½ by 10 in., with 4-in. suction and 3-in. discharge to the fire-main system in the main building. A connection is also made from this pump to the houseservice tanks, two in number, having a combined capacity of 900 galls., located on the S. side of the boiler room. The tanks are so connected that they may be used either together or singly. Coal-storage capacity of 30 tons is provided on the N. side of the boiler room.

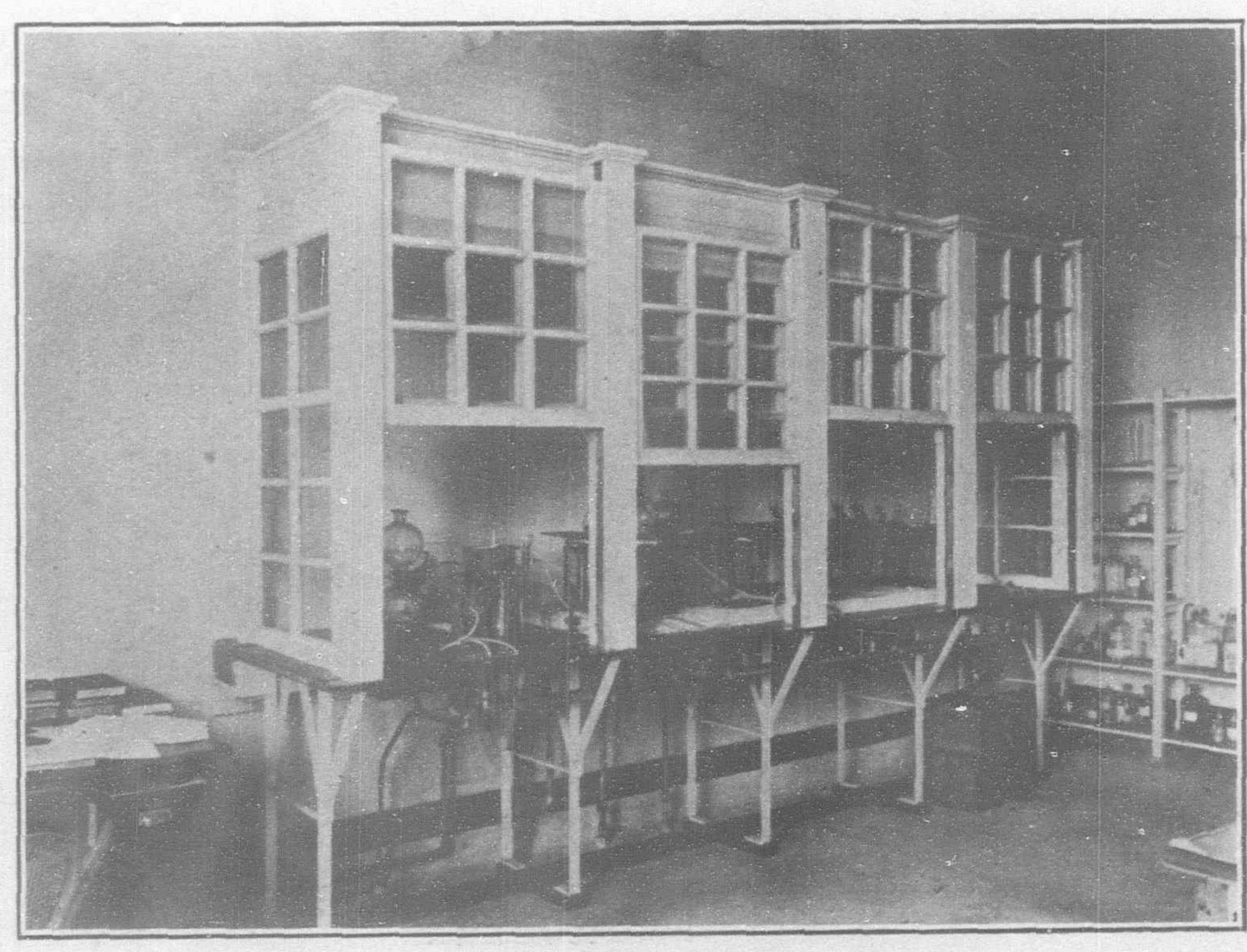
Two Mansfield oil gas generators of a capacity of 100 cub. ft. per hr. each are installed close to the coal bunkers and deliver gas to two sheet-steel gas holders, each of 1,250 cub. ft. capacity, located 100 ft. from the power-house building. A 12-in. smoke header connects the gas-generator furnaces to the main stack.

A cremating furnace 10 by 5 by 6 ft. is built at the foot of the main stack, having 12 sq. ft. of grate surface and an incinerating chamber of 4 by 2½ by 2½ ft. for burning laboratory refuse, small animals, etc.

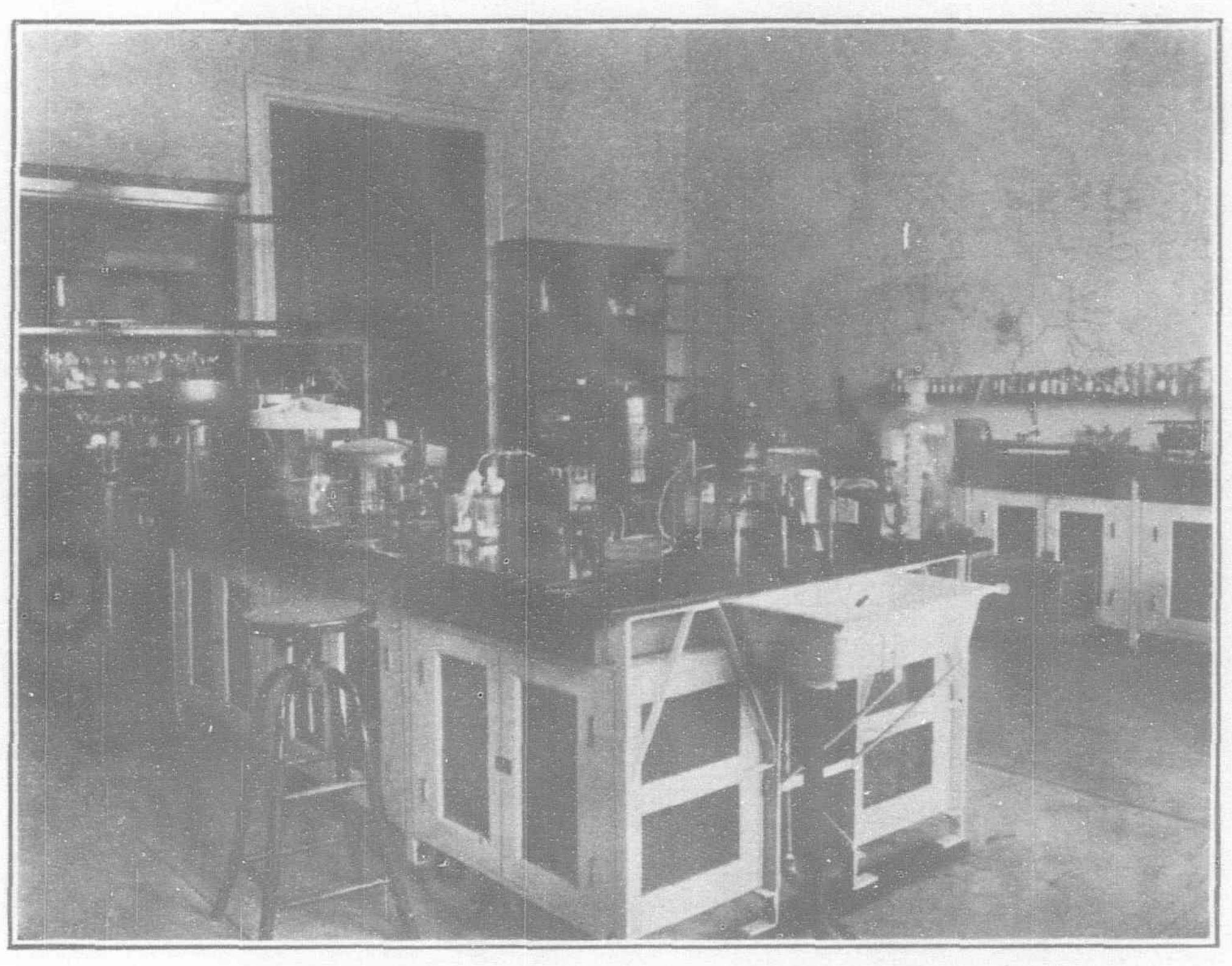
All piping, conduits, etc., connecting the various apparatus in the boiler room pass through a concrete trench covered by checker-ed-steel floor plates to the pipe subway, from which point they are carried to the basement corridor in the main building. The piping ranges in size from 1 in. to 8 in., and wire conduits from 1 in. to 21 in. The subway and corridor are automatically drained by Lawlor cellar ejectors worked by water pressure.

The W. end of the main basement corridor contains a storage battery of 20 cells from which current is conveyed to various laboratory rooms.

The engine-room equipment consists of two horizontal single-expansion Ideal automatic engines of 60 h. p. each, direct connected to two Westinghouse 37½ kw. 6-pole compound-wound direct-current generators. Each unit has a capacity of 300 amperes at an electromotive force of 125 volts at a speed range of 290 to 320 r. p. m. The generators are fitted with equalized connections for parallel working. Current is led from the generators through loricated-steel conduits laid below the flooring to a 5-panel black slate switchboard 15 ft. long. Each generator is protected by an I-T-E laminated contact circuit breaker. The switchboard has two-generator one-power distribut-



ONE OF THE LARGER HOODS IN THE CHEMICAL LABORATORY



ROOM IN THE BIOLOGICAL LABORATORY SHOWING TYPE OF CENTRAL DESK.

ing and one light-distributing panel, and one panel for instruments; it also carries all the air, gas, vacuum, water, steam, and electrical indicating and recording gauges. Ten light-and-power feeders are carried from the distributing panels by means of 2-in. loricated-steel conduits through the subways to eight distributing panels located in the corridors of the main building, and two power feeders pass through conduit to the towers to supply the exhaust-ventilator motors.

Compressed air is supplied by a No. 21 "Christensen" Type N 8½ by 8 in. horizontal compressor of 75 cub. ft. per minute capacity. The compressor is direct geared to a 14 h. p. series-wound four-pole motor, and is automa-

tically controlled between any predetermined maximum and minimum pressure. The air receiver is 3 ft. in diameter by 10 ft. high and is located in the boiler room.

The vacuum pump is a 7 by 7 in. "Clayton" type, and is geared to a General Electric CE type direct-current 3 h. p. motor and will maintain a vacuum in the pipe system of the main building of approximately 29 in.

The house-service pump is a No. 4 "Quimby" type, direct connected to a General Electric CE type 15 h. p. motor, automatically controlled between any predetermined maximum and minimum pressures up to 125 lbs. per sq. in. The pump has a 4-in. suction and a 3-in. discharge to two 36 by 120 in. compression tanks

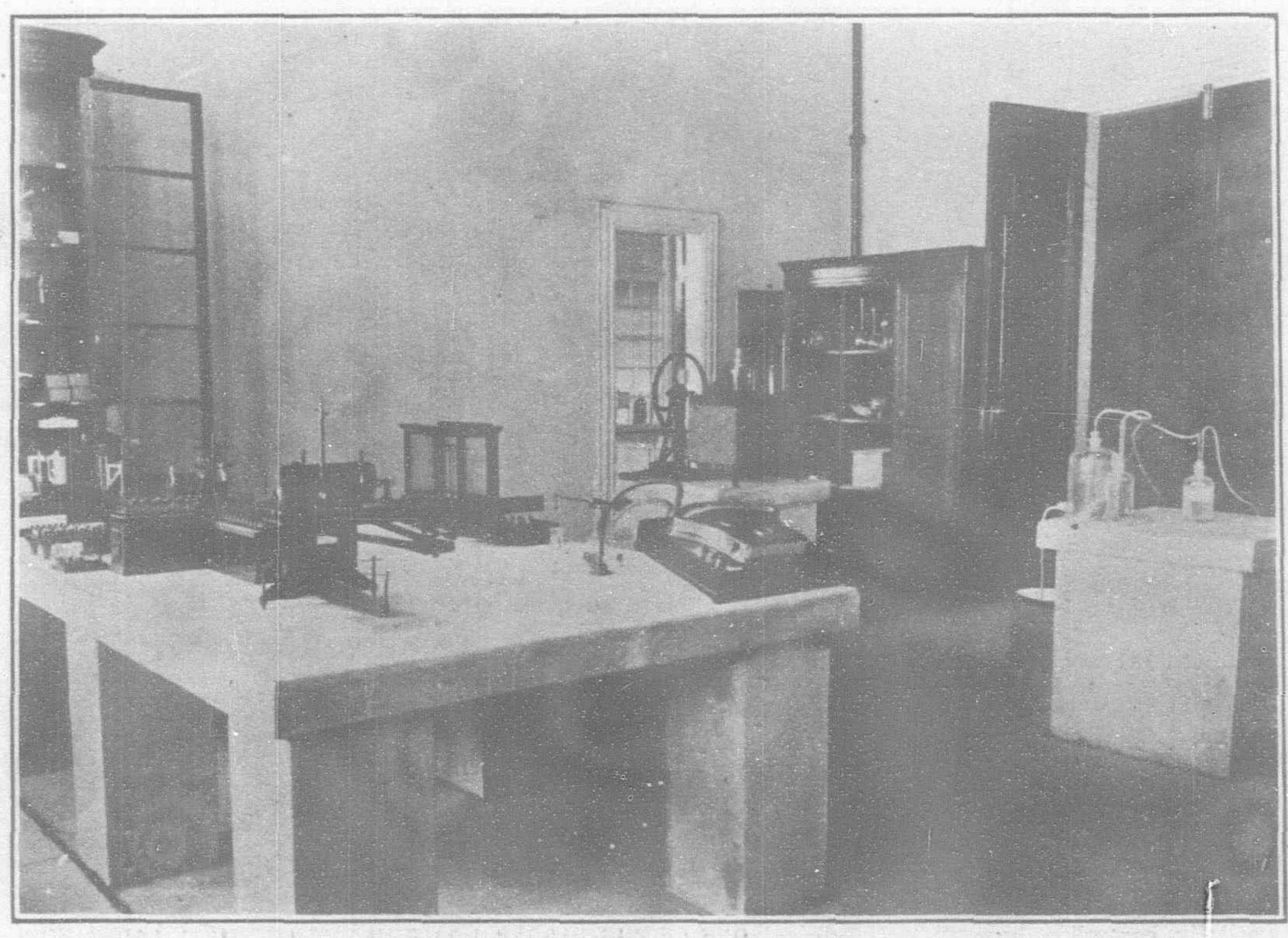
located in the boiler room, from which the water is distributed to the main building and animal houses.

The refrigerating machinery consists of a "Brunswick" double-cylinder single-acting ammonia compressor of 3 tons refrigerating capacity, direct connected to a General Electric 8-pole slow-speed motor, a double-pipe ammonia condenser, oil separator, ammonia receiver, with combination gauges, thermometers, etc., located in the S. end of the engine room. The brine tank is 4 by 6 by 14 ft, and contains five 1-in. ammonia expansion coils; the chilled brine is circulated by a "Quimby" No. 21 rotary brine pump, direct connected to a General Electric CE type 1. h. p. motor, and passes to two cold-storage rooms having a joint capacity of 3,000 cub. ft. and to two refrigerating boxes in the main building each having a capacity of 200 cub. ft. Each of the main storage rooms has five refrigerating coils of 11 in. galvanized pipe and will be maintained at a temperature of 28° F.

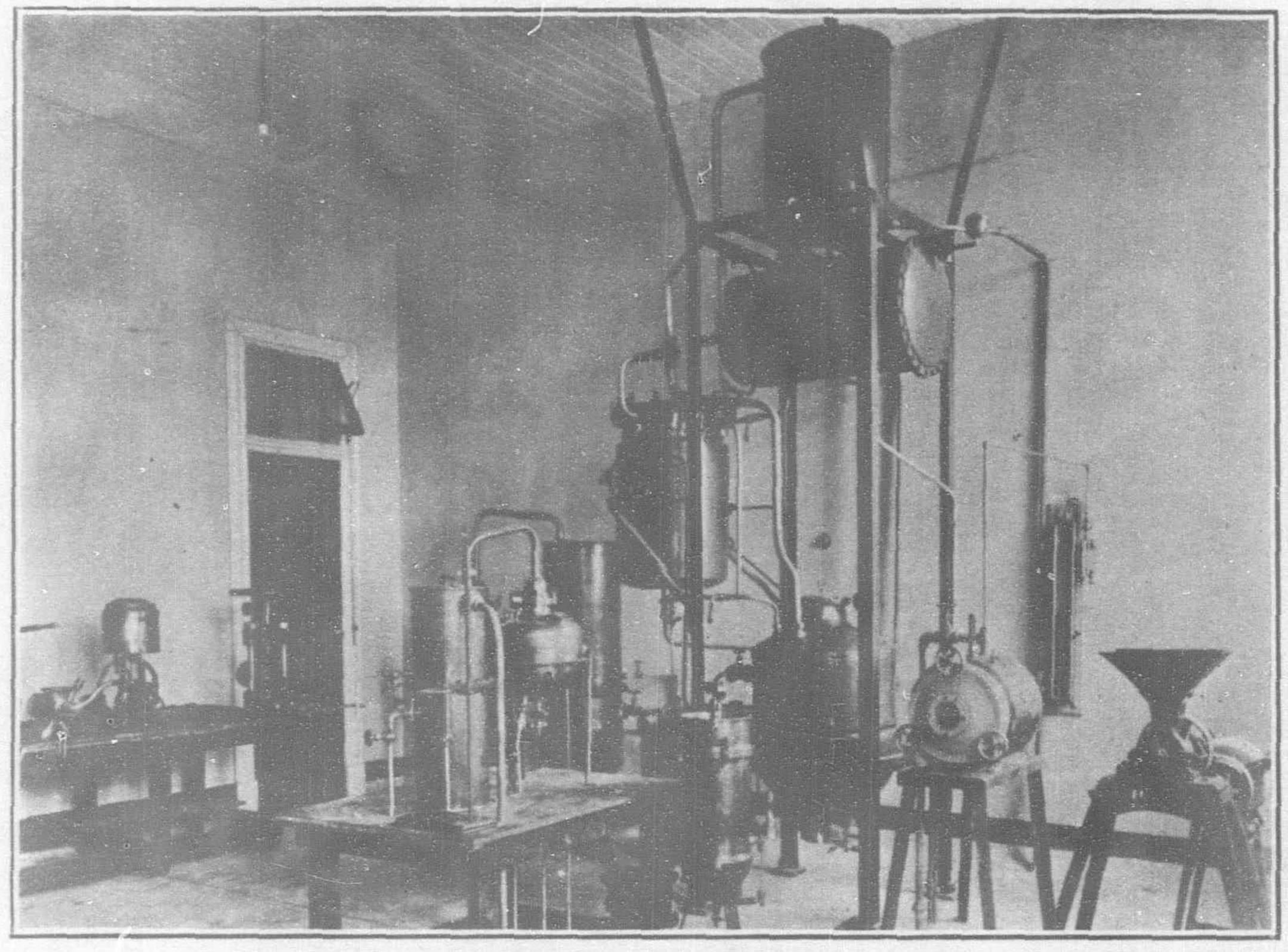
Two 15-in. "Buffalo" B volume No. 6 exhaust fans, direct connected to General Electric CE type 5 h. p. motors, are located in the towers of the main building and connect with a 16-in. exhaust main in the attic, from which 4 and 6 in. branches are carried down to the hoods on the first and second floors. The motors are operated from the main switchboard by means of solenoil-controlled switches and self-starting rheostats.

The exhausters will maintain a velocity of 1,800 ft. per minute through the mains and will allow a complete change of air every minute in all the hoods.

Starting from the power house all the main distribution of the building is through a subway which is in the form of the letter T, the portion entering from the power house joining that from the main building at about the middle. The diameters of the piping leading to the various laboratory rooms have been calculated so as to give as equal a supply as possible of gas, water, vacuum, air pressure, and steam in the various rooms. In order to effect this, the water and gas mains form loops on each floor of the two wings of the main building, thus supplying a perfectly even circulation, and the taps to the individual rooms and desks are taken from these loops. The electriclight wires as well as those of the storage battery and telephones are carried throughout in steel conduit and distributed wherever needed, so



MAIN ROOM DEVOTED TO PHYSICS AND PHYSICAL CHEMISTRY.



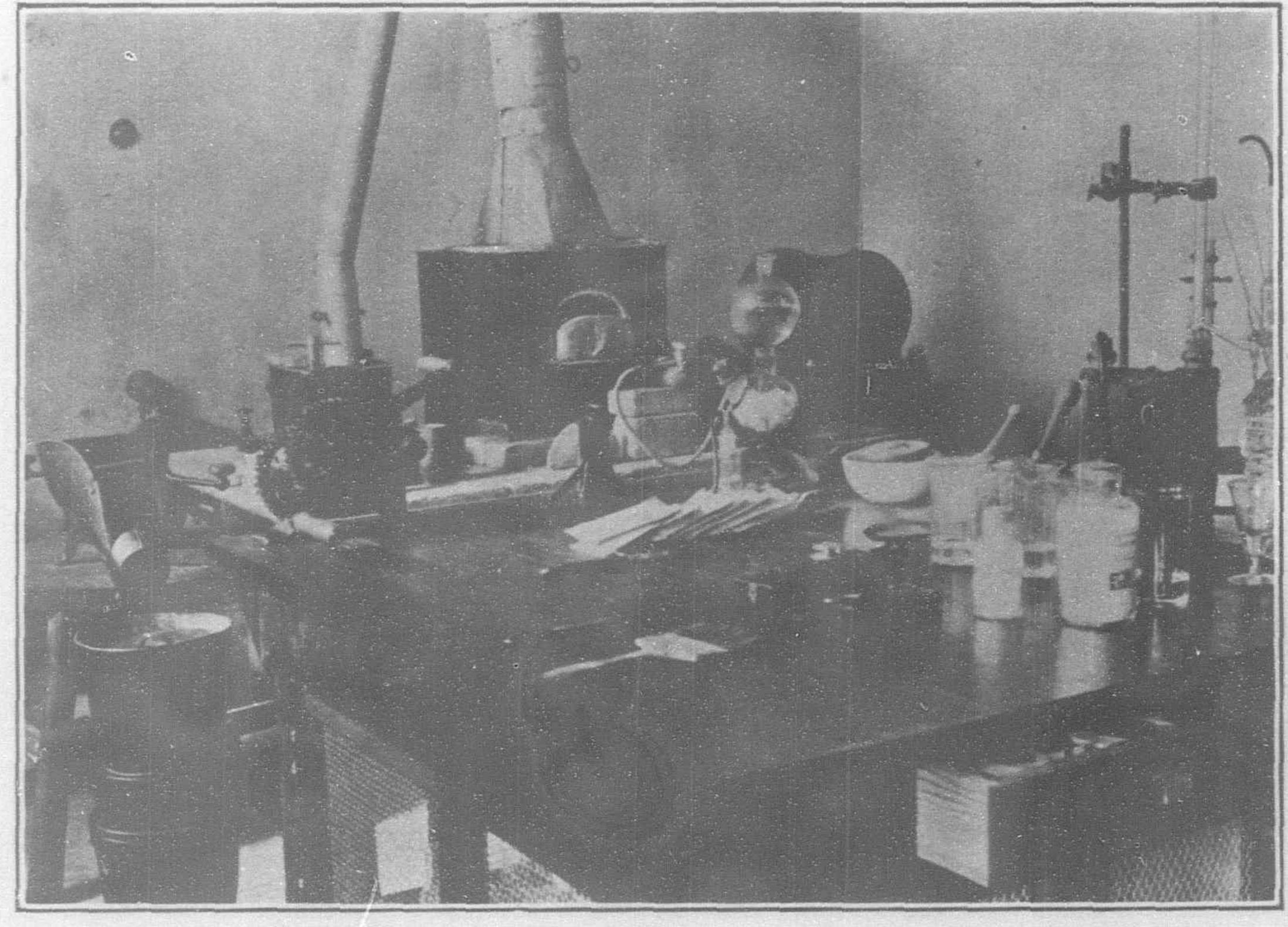
VACUUM DRYING AND DISTILLING APPARATUS, ETC.

that each desk is supplied with light and electric power, provided the motors to be used do not exceed one-sixteenth hors power. Where greater power than this is necessary, separate lines have been run into the building. The storage-battery current is supplied only to those rooms where presumably it will be necessary; for example, those for mineral analysis, physics, and weights and measures, the spectrum analysis room, and the private laboratory of the superintendent of government laboratories.

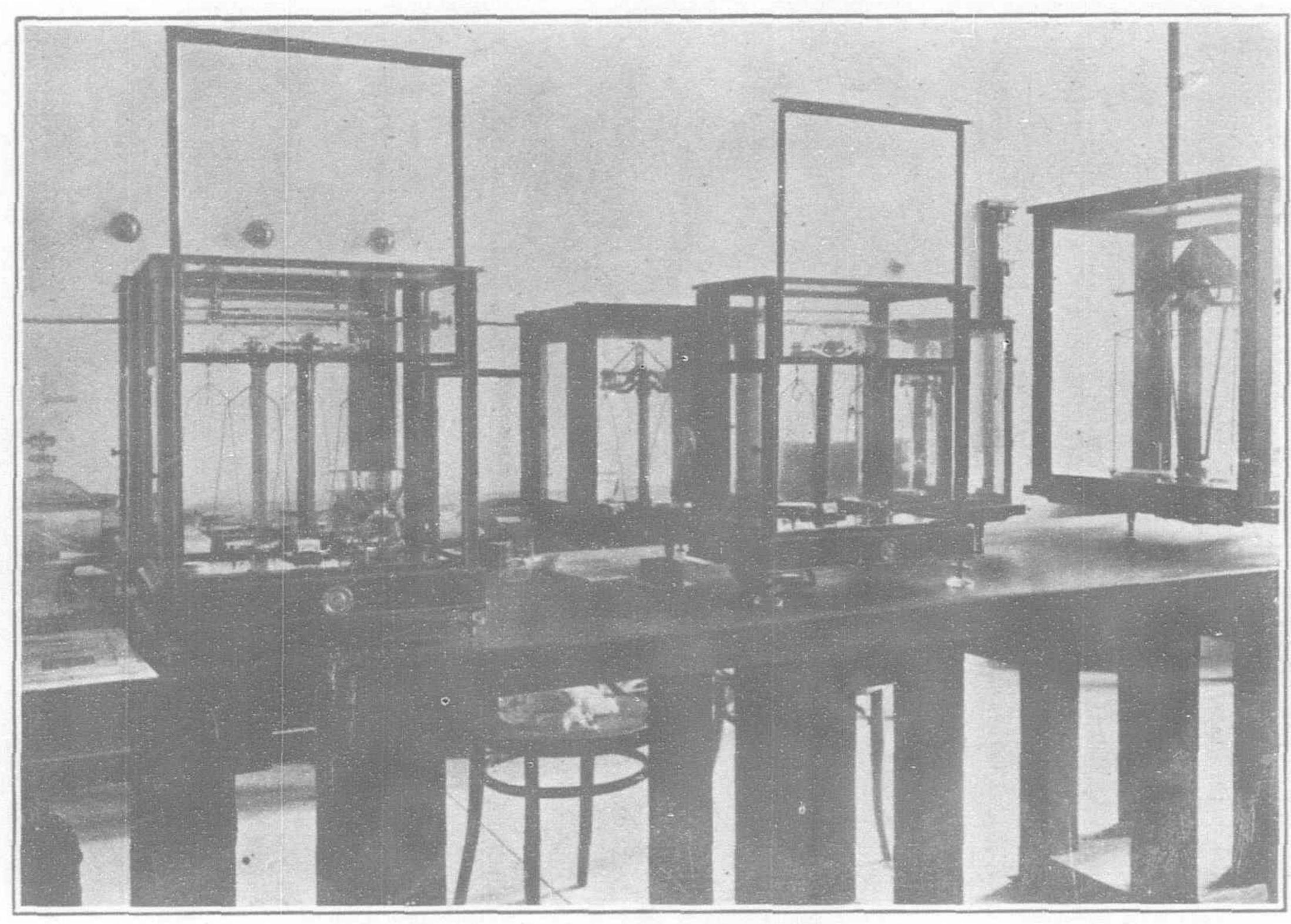
Desk Arrangements in the Individual Rooms.—The general plan and assignment of the rooms has been mentioned above, so that only a description of the individual arrangements is necessary. As these vary but little throughout the biological and chemical wings,

a description of one room for each section will, with few exceptions, do for the others. In the biological wing a microscope table 32 in. above the floor and 30 in. wide is provided along the entire available window front. Each one of these contains two small sinks let in at convenient points, and is furnished with water and gas. Those portions of the tables directly facing the windows are not supplied with drawers, the latter being provided in those sections which presumably, by reason of their not being directly centered behind windows, would not be used for microscopic work. The windows have been placed approximately 16 in, above the level of the desks, so that the strong breezes which prevail in this country would not play havoc with the materials on the work table, but at the same time the light is ample. In

the center of each room devoted to biology is a large double work desk supplied with gas, water, and vacuum, with a large sink and drip board at one end. These desks are 36 in. high and are intended for the general work of the laboratory, providing facilities for heating, filtering, distilling, etc. Each one of these central tables has closets underneath and drawers. To one side, along the wall of each biological room, is a chemical work table furnished with gas, water, and vacuum connected with a sink and having a trough extending the length of the desk; the opposite wall is occupied by a hood 8 ft. in length, equipped like the side desk, which will supply facilities for work with such materials as should be excluded from the general laboratory air. Each hood has a separate flue extending up into the attic and



ASSAY ROOM.



ONE OF THE BALANCE ROOMS.

connecting with the main trunks in the exhaust, so that ample draft will be provided. The hoods are supplied with gas, water, vacuum, and sinks.

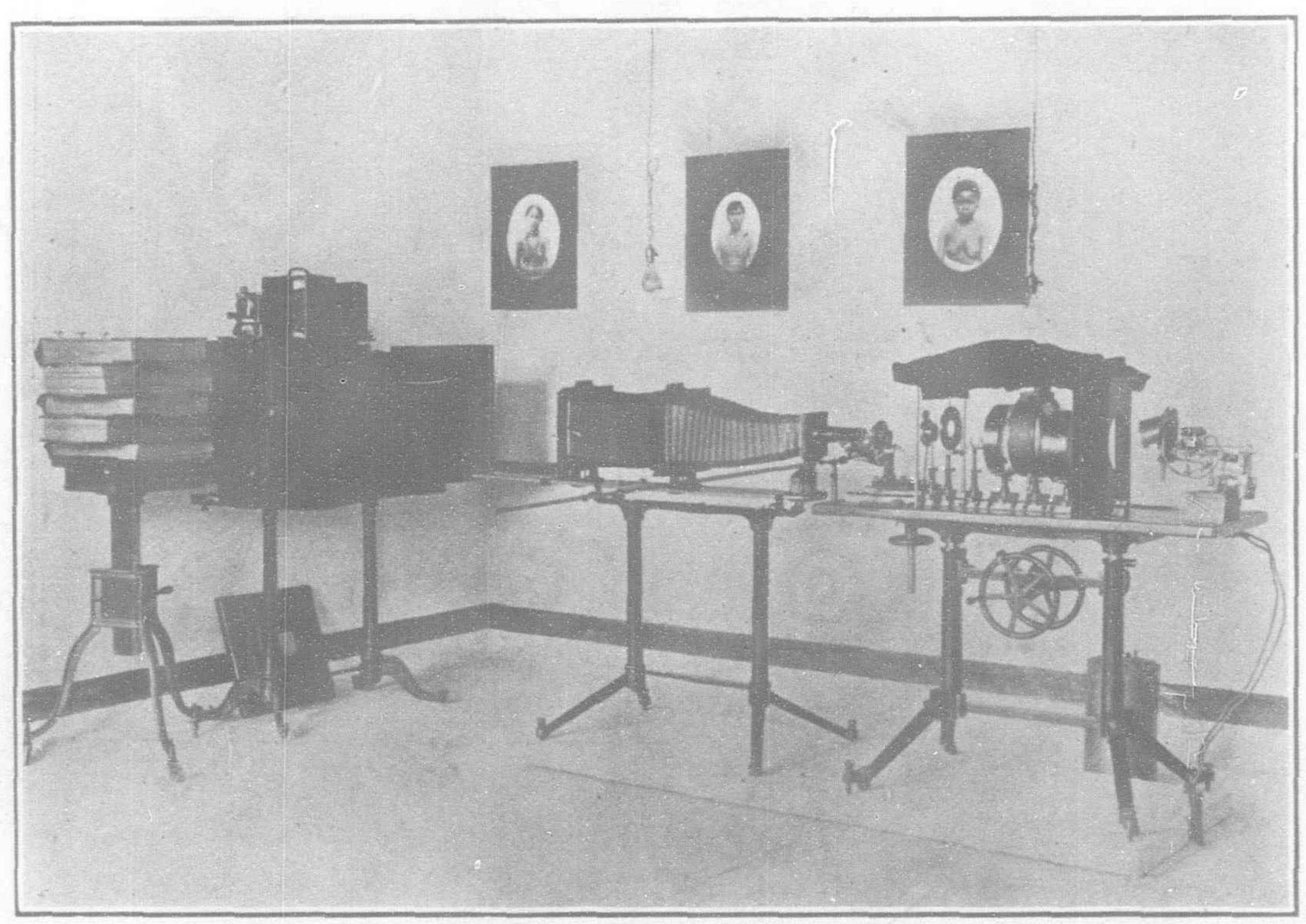
An exception to the general arrangements outlined above is found in the room on the ground floor devoted to the preparation of culture media. In this there is provided steam for use in connection with the autoclaves and sterilizers, as well as gas, water, and vacuum. The main autoclaves of the building, for the use of the biological laboratory, are placed in this room in which all of the culture media is prepared. It has the usual window desk and hood, but in place of the central work desk there is provided a heavy, square table intended to serve in preparing the various media

The rooms for the botanists are not provided with the side tables and hoods. In their place the glass-front herbarium cases are mounted one above the other.

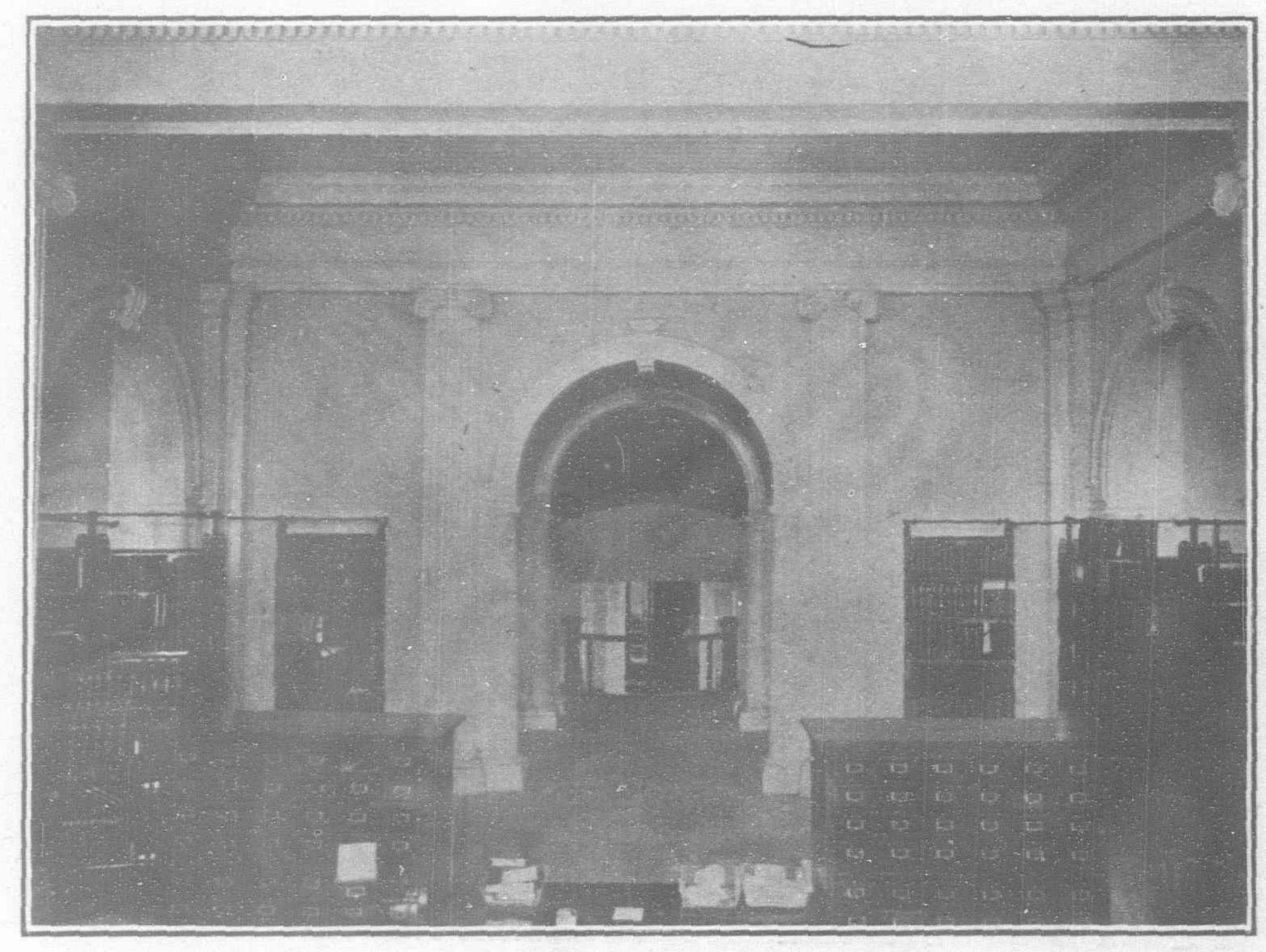
On each floor of the biological wing there is a room 10 ft. wide and 24 ft. long for the purpose of accommodating the refrigerating boxes and the incubators. The former are cooled by coils provided from the cold-storage equipment and are built in two sections, so that one portion may be kept at any temperature within the capacity of the plant, whereas the other may be regulated at 20° to 25°. The incubators are in the form of large boxes with a central door and shelves around the sides; they are 7 ft. long and 3 ft. wide, and are heated by Bunsen burners. Electric heat for the incubators is planned

to be installed in the future, but it can not be operated successfully until after the hospital buildings are constructed, because it is not intended to run the power plant day and night until the necessity arises. The incubator rooms also have in them, attached to the walls, the smaller thermostats for heating paraffin for sectioning and smaller incubators for varying temperatures.

It is not intended to have any great number of smaller animals for experimental purposes inside of the building, and for convenience the house for guinea pigs and rabbits has been placed immediately to the rear of the biological wing. It consists of two large rooms, together with two smaller ones for operating, and a vestibule. One of the large rooms is to be devoted to the storage of animals and to the



CORNER OF THE PHOTOGRAPHER'S STUDIO.



CENTRAL ROOM OF THE LIBRARY.

keeping of those which are under observation but not infected with dangerous diseases. The other large room is completely isolated and screened and is intended for work with plague, smallpox, cholera, and other diseases which may become dangerous and which it is not safe to handle unless every precaution is taken.

On the ground floor of the biological wing one room is set aside for the mechanic. This is provided with power and a complete equipment of lathes, shapers, drills, grinders, and tools, so that the laboratories will be in a position to have their instruments made and repaired on the grounds.

The rooms of the chemical wing show much greater variations among themselves than do those of the biological portion, because successful chemical work needs a greater variety of apparatus and facilities. However the distinction between the biological and chemical laboratories of the present time is not so great as it formerly was, because biologists are now carrying their investigations into fields more closely allied to chemistry. Therefore the general desk arrangement of the chemical rooms is similar to that of those devoted to biology. They each contain a window desk, which is 36 in. high and 30 in. wide, built without the central small sinks but in their place equipped with a trough, sink, drip board, gas, water, and vacuum for general chemical work. In some of the rooms, especially those devoted to mineral analysis, sugar and foods, etc., one end of this window desk is left free without incumbrance of any kind, for the purpose of permanently placing burettes for making titrations. The central large laboratory desk is placed in most of the chemical rooms just as it is in the biological laboratory, with this difference, that it has two central troughs connected with the large sink, is equipped with a reagent shelf in the middle, and is provided with the usual connections throughout its length for compressed air, water, and vacuum.

The hoods in the chemical laboratory are of necessity much larger than they are in those portions of the building devoted to other work, some of them being 9 and others 12 and even 15 ft. in length. The size of the flue for each hood is calculated so as to equalize in all the time necessary to effect a change of air; throughout the building they are provided with rising sash and glass fronts and sides.

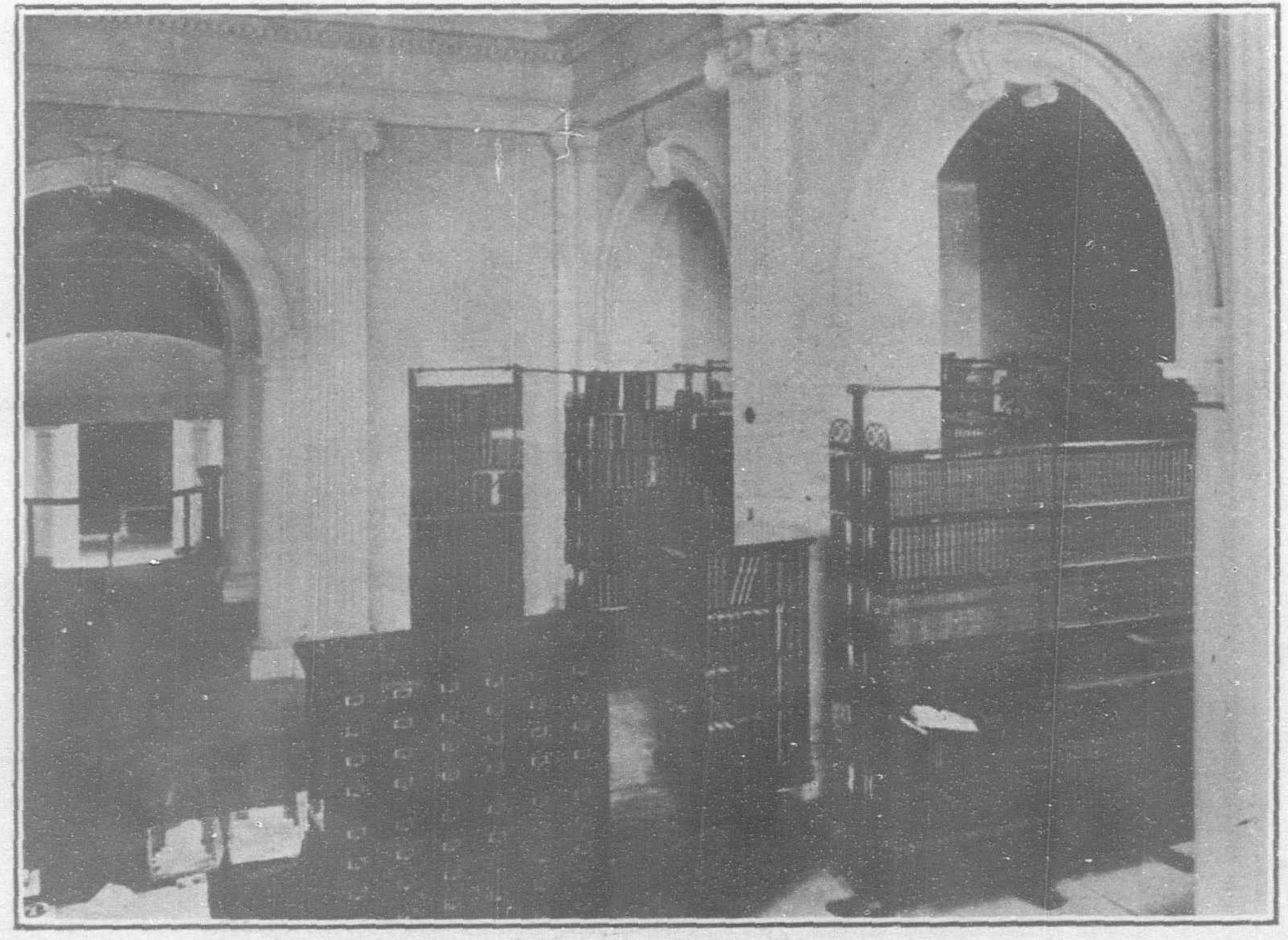
All the hoods in the chemical wing have not only gas, water, and vacuum but also steam and steam-exhaust pipes, so that evaporations

may be continuously carried on without vitiating the air of the rooms. The wall tables opposite the hoods are equipped much in the same manner as are those in the biological wing, but a number of them, in rooms where this is necessary, have pipes for air pressure and steam as well. Storage-battery connections are found on the desks of the rooms devoted to mineral analysis, physics, and weights and measures, spectrum analysis, and in the private laboratory of the superintendent. It is intended to utilize electrolytic methods of analysis to the fullest extent when the building is in complete operation, and as in this class of work it is necessary not infrequently, owing to acid fumes, to have the apparatus set up outside of the general

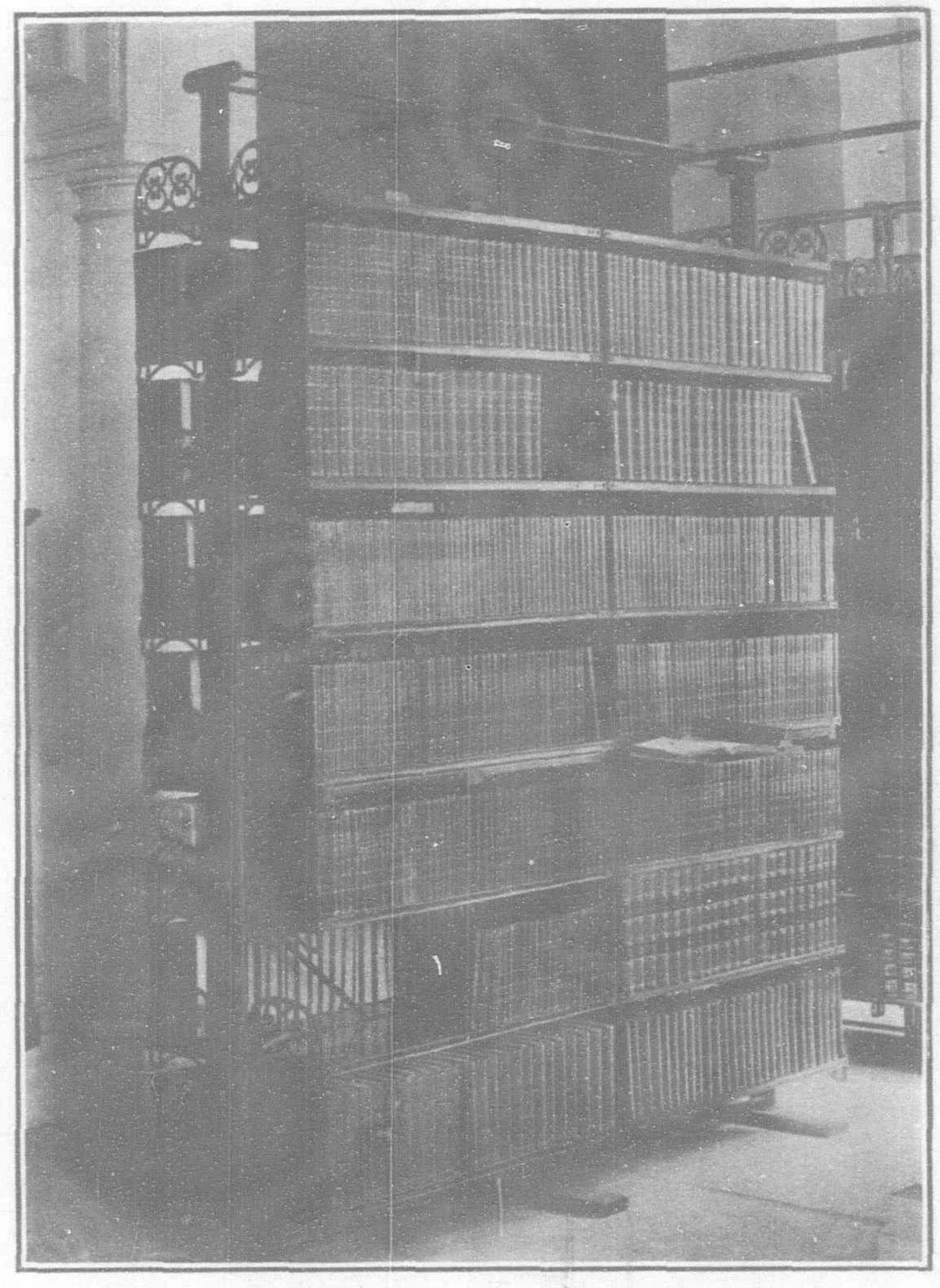
laboratory air, these connections were also placed in the hoods.

Certain rooms devoted to specific purposes vary somewhat from the general type. On the ground floor entering from the E, the first one to the right is devoted to physics and physical chemistry. It is provided with a large central pier with cement posts above and a top 8 in. thick, built upon a foundation which extends 3 ft. below the level of the ground, provided with a broad footing and carried up entirely clear of the building. At a distance of 10 ft. from the main pier and on each side is a secondary one brought up from the ground in the same manner, the group of three forming a triangle. All of the stability necessary for electric and other work is obtained by this arrangement. On one side of the main physics room is an ordinary wall desk supplied with gas and water for the purpose of electric conductivity measurements and physical chemistry. It is provided with storage-battery connection and is to have a large permanent thermostat tank attached to one end. Back of this main room to the E. and connected with it by a doorway is a second one. It contains the ordinary wall-desk and hood and is intended for the usual chemical work so necessary in a physical laboratory. Finally, to the E. of the two just mentioned is a third for photometric work. It contains a long and heavy photometric table placed upon piers built in the same manner as the ones which have been described. The facilities in the division of weights, measures, and physics will be such that all classes of work needed in the adjustment of the weights and measures of the Islands can be carried on.

Across the hall from the rooms intended for physics and weights and measures is a large room to be used as a place for studying commercial processes. It has the usual central work-table and a long hood. One of the walls, differing from the general usage in the building, is occupied by a table on which are placed the shaking and stirring machines necessary for much of the work to be done in connection with the extraction of organic products. These machines are operated by a motor of ½ h. p. and are belt driven. The window desk is intended for distillations in which ether and other volatile inflammable substances are used, and as a consequence gas has been omitted from it, the heating being by means of steam only. At the E. end is an alcove in which are placed various machines to be used in studying com.



EAST ALCOVE OF THE LIBRARY.



METAL STACK IN THE LIBRARY.

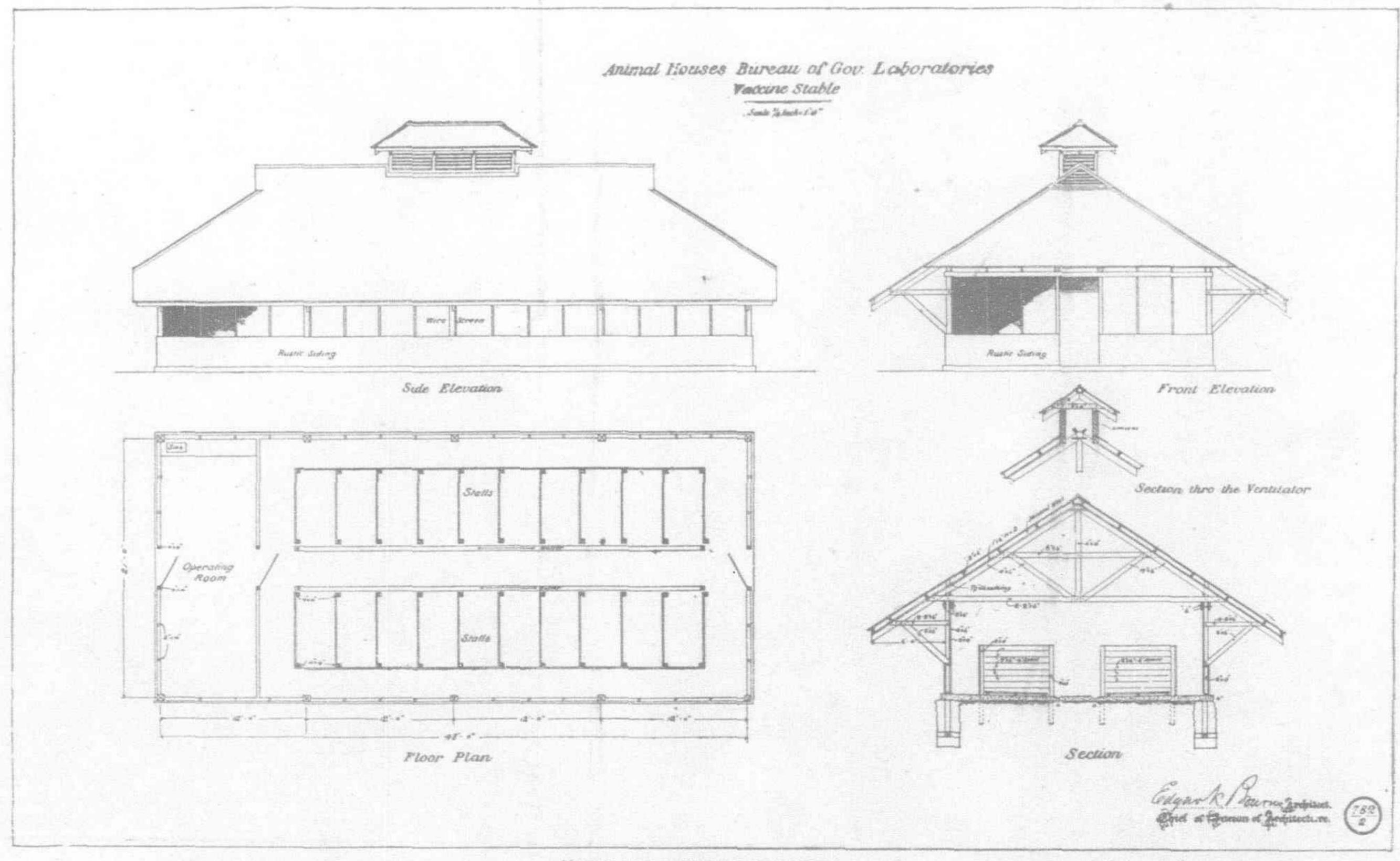
mercial processes. They consist of a copper still of 90 liters' capacity which is supplied with a steam jacket so arranged that either indirect or direct steam may be used. The ap-

paratus is supplied with vacuum connections, so that materials may be distilled in vacuo as well as under atmospheric pressure, and a double stopcock for the extraction of samples

without interfering with the vacuum is attached. Next to this still stands a large extraction apparatus consisting of a boiler of 140 liters' capacity for the solvent. From this and extending to the extreme top is the exit tube connecting with the condenser, which is at the highest point; below this and between it and the still is mounted a receiving drum for the condensed solvents, and farther down and to one side is the extraction apparatus proper. This consists of a large kettle of 100 liters' capacity, steam jacketed to use heat if necessary, containing baskets for the placing of materials, and mounted on trunnions so that it may be tilted to empty and clean it. The entire apparatus is fitted with vacuum which is connected with the condenser above and the trunnions are so arranged that steam may be admitted through them into the extractor, which is fitted with the necessary safety valves to prevent accidents. A smaller still of 15 liters' capacity, on the same model as the large one, is also provided. All of this apparatus is of the make of Gustav Christ, of Berlin. In the alcove of this room besides the apparatus given above there are mounted a porcelain ball mill for the pulverizing of refractory materials and a drug mill for grinding, both operated by a one-half-horsepower motor with shafting and belting, a hydraulic press and a vacuum drying apparatus, the latter of the make of the American Vacuum Drying Company.

Crossing the hali and immediately to the west of the room for physics is the assay labor, atory. This is provided with a large firebrick table mounted on a pier and holding the main assay furnace from Braun & Co., Los Angeles, Cal., supplied with Cary hydro-carbon burners, the gasoline tank being placed in the ground outside the building so as to avoid all danger from fire. On each side of the main furnace are smaller ones, both muffle and crucible, of the Hoskins type. The main assay flue extends from these up to the roof and 15 ft. above the latter. The corner of the assay room next the furnaces is occupied by a Braun crusher and pulverizer and a Bonnot ball mill, both operated by a 1 h. p. motor with shafting and belt. In the center of the room is a pier for the rolls and a large table for general work with samples. The other arrangements are like those of the chemical laboratory in general.

Next to the assay room is a balance room for the general use of the ground floor and for the button balances, and leading from this is



TYPE OF ANIMAL HOUSES.

the combustion room for organic ultimate analysis, containing two combustion tables and one side table supplied with gas and water for the bomb furnaces.

The storerooms are two in number and are provided with shelving extending from the ground to the ceiling. One room is intended for chemicals and the other for apparatus, the former being supplied with a small laboratory work-table and hood and a distilling apparatus connected with the main boilers and to be used for the purpose of making distilled water.

In the chemical wing on the second floor the only variations from the general type are found in the room to the east and farthest along the corridor, in which is placed a special desk with compartments for the polariscopes, and in the main balance room. The latter has one central pier running from the ground up and constructed in the same manner as the ones described above. Upon this is placed a heavy balance table capable of accommodating eight instruments.

The photographer's room on the second floor immediately to the left of the main staircase is fitted with two dark rooms 8 by 10 ft. with large leaded sinks, drip board, shelving, and tables, and on one side is the stand for the photomicrographic apparatus. This is built on a solid pier 10 ft. long and 30 in. wide, constructed on the same principle as the others in the building and placed well into the ground on broad footings. The photomicrographic apparatus is of the latest Zeiss pattern, both stand and camera, and the source of light is a 90° Thompson are light. The photographer is also supplied with 5 by 7 Graphic cameras with Zeiss series and A lenses, an 8 by 10 camera with Zeiss lens, as well as a Goertz anastigmat and enlarging camera and an apparatus for making lantern slides.

The library consists of a main room connected on either side with the stack rooms. The librarian's desk is placed in the center with the various files on either side, the reading room is in the alcove, and the book stacks are arranged on either side in the wings of the room and in the stack rooms. They are metal and of the type supplied by the Library Supply Company of Boston.

The serum laboratory in the power house has the same general arrangement of desks and hoods as the biological portion of the building. It needs no special description, with the exception of the serum kitchen, which contains a large, steam-supplied autoclave and sterilizer of the pattern made by Messrs. Bausch & Lomb, and a centrifugal from Lautenschlager, of Berlin, the latter driven by a 4 h. p. motor. The serum laboratory also is provided with two large incubators of the same type as those used in the biological division. The vaccine stable is placed immediately next to the power house. It is fly-proof throughout, with cement floors and stalls for twenty calves and an operating room for inoculation and for collecting the virus. The calves in this place can be kept under thoroughly aseptic conditions. On the other side of the power house is located the building for small animals. The guinea pigs and rabbits will be kept in galvanized-iron cages placed on racks well in the center of the room to insure coolness. To the rear of the driveway is a horse stable of a capacity sufficient to accommodate twelve horses, fly-proof, as in the case of the building for vaccine calves. It contains an operating room which will make it possible to collect serums according to the most improved methods. The last building of all is a small, two-storied one for dogs, goats, and monkeys.

APPARATUS AND SUPPLIES.—In Manila the greatest difficulty encountered by a laboratory is to keep on hand a sufficiency of special supplies, and also to provide the apparatus which may be necessary. While the equipment may apparently be complete, nevertheless requests for new clasess of work may suddenly bring the laboratories face to face with the necessity of purchasing new kinds of apparatus, and until these are delivered of refusing to do the work demanded. To procure stores from Europe or America takes at least seven months. As a result the equipment of a laboratory at such a distance from the base of supplies must be somewhat more extensive and complete than it would be in Western countries, because when

the emergency arises it is not possible immediately to procure the materials necessary for the work.

A large portion of the special apparatus has been mentioned in the course of the description of the building, so that only a brief review of the remaining equipment will be necessary. The laboratory is supplied with fifteen microscopes of the best pattern from Zeiss, of Jena, and with two microscopes for travelers from Leitz. All the necessary lenses to equip these instruments for ordinary work are at hand, and in addition there are a certain number of apochromatic 2-millimeter aperture 1.30 and 1.40 lenses. Ocular and stage micrometers, Abbé drawing cameras, and other accessories are of necessity a part of the equipment. The microtomes were bought from Schanze, of Berlin, and are five in number, besides which there are two Minot automatic instruments and

The incubators are of the manufacture of F. & M. Lautenschlager and are divided into two classes—the portable ones for the individual rooms and the larger ones. All the necessary apparatus for work in preparing sections is also at hand.

one using carbon dioxide for work with frozen

The museum is amply supplied with jars of all sizes, and the storerooms contain the necessary surgical instruments, post-mortem sets, and other appliances necessary for biological work.

The chemical balances are of the make of Sartorius, of Goettingen, and of Rueprecht, of Vienna. There is one precision balance weighing to 5 kilograms and another to 10, to be used in the standardizing of weights and measures. Both of these are of the make of Sartorius. The laboratory has also a normal kilogram and a normal set of weights from 500 grams downward from Rueprecht, and a chief normal thermometer from A. Haak, of Jena, from whom all of the laboratory thermometers have been purchased. It is also provided with a complete set of normal specific-gravity apparatus, alcoholimeters and other appliances for work with specific gravity. Apparatus for electric conductivity measurements from Goetze, of Leipsic, has been purchased, as well as normal volume measures from the same firm. An electric furnace for 300 amperes current for obtaining high temperatures is also a part of the chemical equipment. The necessary routine apparatus, such as flasks, beakers, Petrie dishes, evaporating dishes, platinum ware, retort stands, lamps, filtering apparatus, vacuum distilling flasks, condensers, etc., have been bought in sufficient quantity to meet all probable demands for the year, so that the laboratories are well equiped to meet emergencies. A detailed list of all the apparatus in the building would be too extensive for this article, nor would it be necessary, because the outline given above is sufficient to indicate the nature of the equipment.

#### JAPANESE ENGINEERING

Professor Robert H. Smith, a well-known British educator, presents a most interesting article on the progress of engineering science in Japan. After adverting to the alarms, which experience has shown to be baseless, exhibited as to the "national perils" within the past few years, Professor Smith says:-"The present article is written to sound the note of alarm of the new peril, which is a real and genuine one. This is the birth and rise of a new mechanical science in Japan, which will soon transform our Old World machinery into unusable antiquities if our Scottish and English and German and American engineers do not gird up their loins and educate themselves to a really scientific standard in the design of machines. We must throw overboard the hoary simplicities of Molesworth and Kempe; we must no longer be dumb, faithful followers of rule-of-thumb instead of reason and observation; for fetish worship at the altar of formulas we must substitute commonsense consideration of practical requirements; we must abandon the habit of 'assuming' a hyperbola to be a straight line 'for the sake of simplicity in calculation' merely because somebody said 80 yrs. ago that it appeared to be not very far out of the straight; we must study economy and efficiency

with dead-hard scientific accuracy, and those who decline to take the trouble to do so must be requested to step off the manufacturing stage. It is, of course, a troublesome programme to set before a nation, who has never 'passed' beyond linear equations of a single unknown quantity, but there are so many unknowns in nature and so many degrees in art that those who will not move beyond the simplicities of last century must certainly succumb to the new yellow science of mechanical manufacture. There is yet time to escape the peril, because although the baby is already clever with his tools, he is not yet endowed with any abundance of reserve strength or capital." Reviewing a series of the proceedings of the College of Engineering in Tokyo, Professor Smith pays these the highest compliments for their ability. In particular he refers at length to a work by Mr. Inokute, professor of mechanical engineering in the Tokyo University, of which he says:- "Considered as an essay in the application of mathematics to a technical problem of the highest practical utility, taking account, as it does, in the most thorough manner of all the physical phenomena involved by help of the best physical data at present available, and working from the basis of the maximum possible physical efficiency being desirable, this paper by Professor A. Inokute deserves to rank as one of the greatest achievements ever attained in skilled calculation. Although the substance is difficult, the style is eminently simple, direct and free of ambiguity, so much so that to those who are able to read it is a genuine pleasure to do so. The aim of the whole investigation and of the new designs of centrifugal pumps that result from it, is the same as that more or less attained in the modern high-lift centrifugal pumps of Sulzer and of Mather and Platt, but the method of attainment in the design is quite different, and we doubt whether in either of the European designs is there to be found any such skilful effort towards minimization of losses."

#### HOW TO SECURE TRADE IN CHINA

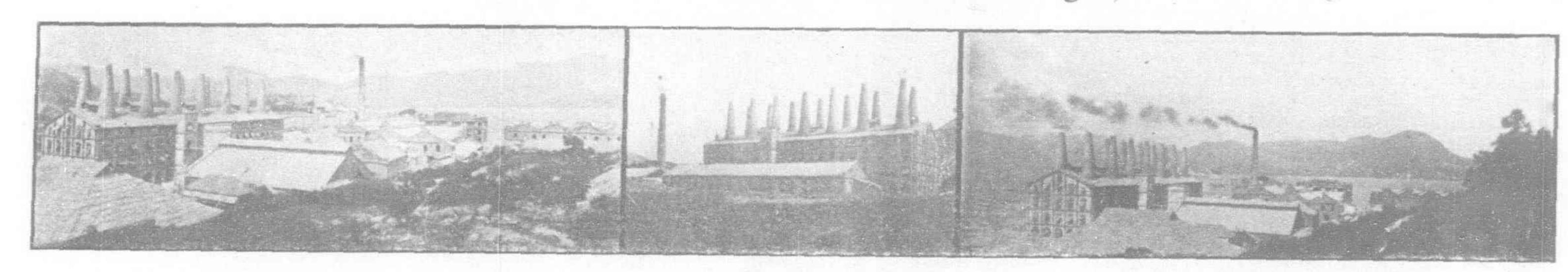
Consul Anderson, of Amoy, says the best way to obtain and to hold Chinese trade is by selling goods as cheaply as possible, always offering the best quality possible for the money. It pays to sell goods of full value in the Far East, and it would be unfair to the American business men to say that they have greatly erred in not doing so. It is a fact, nevertheless, that one of the strongest obstacles to be overcome in stimulating foreign trade in China is the fact that Chinese in the past have bought cheap foreign goods, have tried them, and have found them wanting. Goods of all classes to be sold in China must be cheap. The people can not buy them unless they are cheap; but this cheapness should not be obtained at too great sacrifice of quality. This is especially true of goods like cotton goods, of which the Chinese themselves have been manufacturers for ages. It certainly will not pay to send shoddy goods to China at any price. It might bring temporary trade, but the policy will react strongly and more will be lost than has ever been gained.

#### PROGRESS IN KOREA

Everywhere in Korea, according to a consular report, progress and prosperity are marching hand in hand. Natural hindrances to trade are being overcome by scientific methods worthy of the W. or by expedients worthy of the E. For example, the shallowness of the river at Chemulpo long hindered the arrival of large vessels. This is to be obviated by running rails over bridges to two islands near deep water. The work is being done by the Japanese. Trains are to run from the mainland alongside of steamers docked on the deep-water side of the islands. Rocks have been blasted, piers, docks, wharves, etc., built at great cost; but it is believed the increase of business expected will more than make up for any probable expenditures. The latest population figures give Korea 6,000,000 souls, including Ham Keung, a province in the N., under Russia before the war. Seoul, the capital, has 200,000 and is constantly increasing. There are 50,000 Japanese in the kingdom.

## INDUSTRY OF THE GREEN ISLAND CEMENT COMPANY, LTD., HONGKONG

(Messrs. Shewan, Tomes & Co., General Managers)



HONGKONG WORKS OF THE GREEN ISLAND CEMENT COMPANY, LIMITED, SHOWING KILN HOUSE IN THE CENTER,

Among the most interesting of the pioneer industries of the Colony of Hongkong are the Portland cement works of the Green Island Cement Co., Ltd., of which Messrs. Shewan, Tomes & Co. are general managers. The product of this plant is of the highest grade, and its excellence has long been recognized by the British

the stone is fed. The powdered stone passes on to the "griffin" mill where it is crushed finer still, and it is then elevated by means of lifts to the upper story of the building, where it meets the clay which has been ground up by a somewhat similar process, and each is weighed off on an automatic weighing machine. This

DAM BUILT AT HONGKONG WITH GREEN ISLAND PORTLAND CEMENT.

Government, the War Department of the United States, the Philippine Government, and private contractors throughout the Orient. At all points in the Far East, including the Philippines, docks, bridges, fortifications, harbor improvements, etc., are being constructed with the "Green Island" brand of Portland cement.

The Company began the manufacture of its cement at Green Island, near Macao, a little more than 15 yrs. ago, and the demand for the output grew so rapidly that in 1899 a much larger and more modern factory was established in the Colony of Hongkong on the Kowloon side of the harbor, where it stands today. Changes for greater efficiency of manufacture have been many since that time, and even now the company's works are in a state of transition. The ever-increasing demand for "Green Island" has rendered further plant necessary, and that to be installed—for which capital was recently authorized—will be of the latest and most improved design.

The limestone used in the manufacture of "Green Island" cement is obtained near Canton and the clay near Macao, and these materials are transported to the works in junks. From the wharf the stone is conveyed by means of overhead buckets to the company's yard, where it is dumped in heaps, as desired, for future use. From there it finds its way to the crushing mills, of which there are two. They have a capacity of 8 tons of stone each per day. One mill reduces the stone to about the size of road metal and the second mill further reduces it to about the size of peas. It then goes on edge runners where it is ground into coarse powder. The edge runners are heavy rollers working on a stationary bed and under which

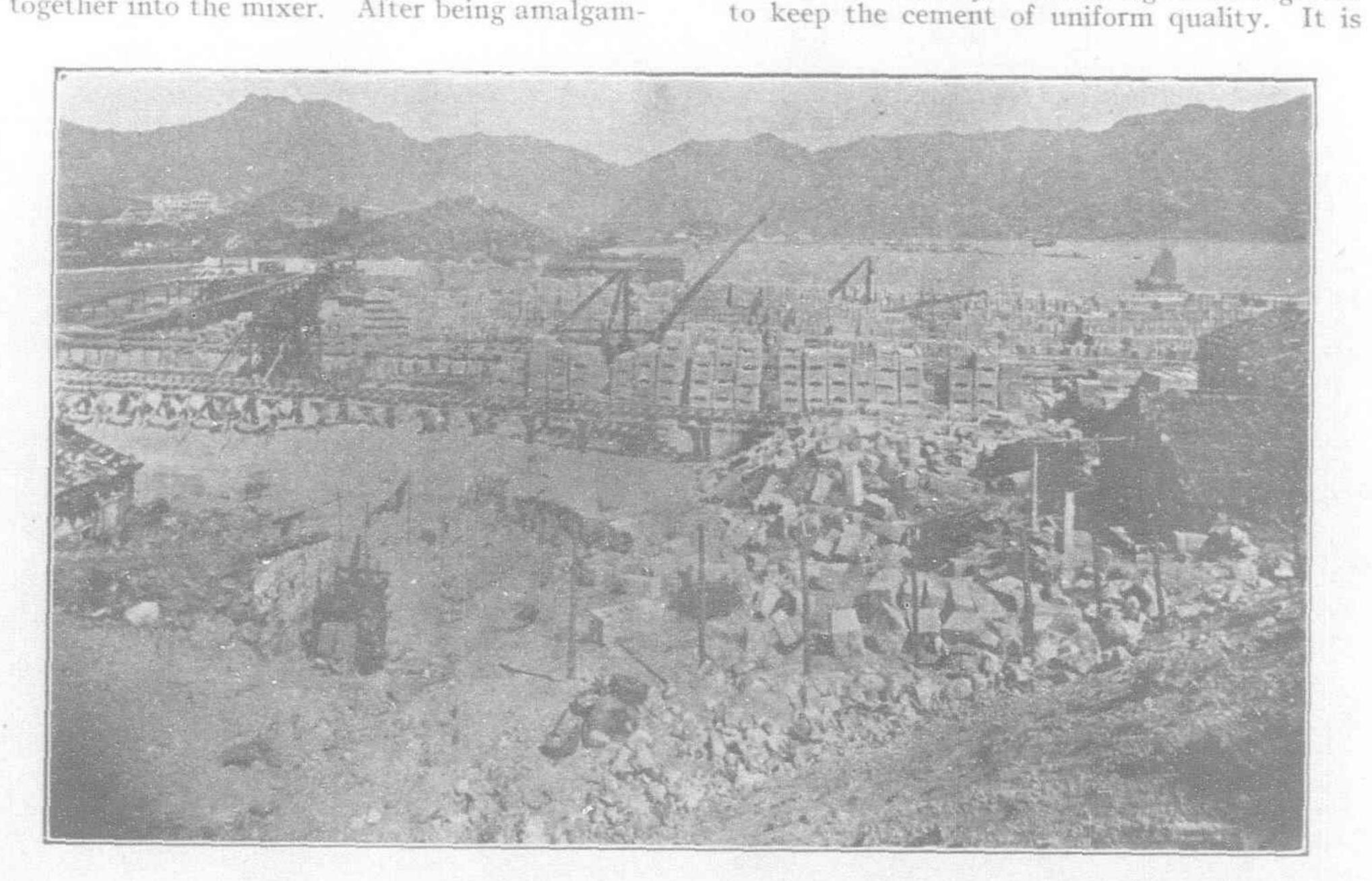
apparatus is very nicely adjusted, and by an ingenious contrivance manages two buckets so that they are dumped directly the desired quantity is obtained, and then both are emptied together into the mixer. After being amalgam-

ated, the compound is passed on to the tube mills, and, by means of flints inside of the mill, it is further pulverized.

The tube mill is an iron cylinder arrangement so that one end is higher than the other end and is half filled with flints. The grist is fed in at one end and it gradually finds its way to an outlet in the other end, being reduced to dust in the passage by the falling commingling stones. The powder obtained then disappears into another machine, where it is mixed with water and comes out in a continuous oblong strip which, in forcing its way along, turns a small cutting machine which slices it off into bricks. These are placed on iron trucks and are wheeled off to the drying tunnels. There are 12 of these tunnels which hold 18 trucks each and could treat 100,000 bricks per day. Trucks are pushed in by means of an iron runner which passes into the hot tunnels and out again as desired, taking the truck with it and leaving it in the tunnel. After about 18 hrs. in the dryer the bricks are ready to be fed into kilns, and taking the elevator one finds them stacked in at the top of the kilns. One floor below stokers are hard at work attending to the fires, which require looking after every 6 hrs. Long iron bars are used for making a hole down through the mass of coal and bricks. These cause a collapse, and the burnt stuff falls underneath. Fresh coal is fed to the fires,, and a story below more stokers are at work with their rods in the direction of the men above. The bricks force themselves down through the fire by their own weight. This causes them to break up and at the bottom of the kiln men are busy taking away the product.

The kilns are 14 in number and are of the Aalborg type.

The product of the frying tunnels is placed in a large store where it lies for some time, the result of several days' work being mixed together



MA TAU KOK BLOCK YARD, HONGKONG.—THE BLOCKS SHOWN ARE MADE FROM GREEN ISLAND PORTLAND CEMENT FOR THE NEW ADMIRALTY DOCK IN HONGKONG. ONE HUNDRED THOUSAND TONS OF THE PRODUCT WILL BE REQUIRED FOR THIS WORK.

next placed in trucks and taken into an adjoining building where the trucks are elevated by means of an endless chain and emptied into ball mills where the grinding commences again. The ball mills grind coarse, and the tube mills, which come next, fine. The powder produced is fed into specially constructed trucks and is wheeled away to the bins, where it is stored until ready for packing. From time to time samples of the powder turned out by the last mill are taken and removed to a room specially set apart for testing.

Bags for putting up the cement are purchased, but the casks are made in the company's own

factory.

. The motive power for the whole of the works is provided by 5 Babcock & Wilcox water-tube boilers, which work up to a pressure of 180 lbs. to the sq. in. A Green's economizer is fitted so that the smoke and fumes are used in heating, and the water is fed into the boilers at boiling point. A 500 h. p. engine drives the machinery used in treating the raw material, and a 350 h. p. triple-expansion engine for all purposes connected with the cement. In the corner of the engine room are pumps which provide the water for the hydraulic lifts. The supply from these is regulated by the pressure of a piston carrying a weight of 50 tons. Throughout the works the lighting is with electricity.

The company's factory occupies an area of 1,000,000 sq. ft., and in round numbers the plant in use cost \$1,000,000. When the factory was first started, at Green Island, the output was 1,000 tons per month; now 4,000 tons per month are produced at the Kowloon factory, and 2,000 tons at the Macao plant, where four kilns are being operated. New rotary kilns, now being installed, will reduce the time required for burning to I hr., and they will increase the output by at least 3,000 tons per mo. These kilns will work on an entirely new principle, being round like long cylinders, and will burn the material by having coal dust blown into them.

In the factory during the busy season from 1,600 to 1,800 men are employed, and taking into consideration shipping and the getting of limestone and clay, the industry provides not less than 3,000 men with employment.

#### CANTON-HANKOW RAILWAY

Viceroy Chang Chih-tung of Canton has reported to the Peking Government, according to an influential Chinese newspaper, on the loan he has raised from Great Britain to restore the Canton-Hankow Railway. The résumé of

the report reads as follows:-

J. P. Morgan's syndicate in the United States - proposed the restoration of the Canton-Hankow Railway to China by the payment of the sum of \$6,750,000 to be paid in three installments within 6 mos. The sum of money required for these payments has been obtained from British authorities as a loan to China bearing interest at the rate of 41/2 per cent per annum for the term of 20 yrs. without discount. The securities for the loan are the revenues from opium in Hupeh, Hunnan, and Kwangtung, etc.

Besides the above there is said to be a separate agreement which is not reported by the viceroy to Peking, which contains the

following items:-

I .- Half of the engineers for the construction

of the line shall be British.

2.-In case any further loan is needed for the road the British shall have the first opportunity of subscribing.

It is also understood that the viceroy has consented to have the engineering staff composed of half British and half Japanese engineers.

#### CONCESSIONS IN CHINA

(Concluded from October.)

[In its October issue, THE FAR EASTERN REVIEW published the greater part of two most interesting and instructive letters on the foreign concessionary situation in China, written in 1898 for the London "Times" by its special correspondent, Mr. J. O. P. Bland, secretary of the Shanghai Municipal Council. The first installment of the correspondence concluded with a reference to the Hankow-Canton Railway, which has just been returned

to the Chinese by the American interests which controlled the concession, and the ascension of a predominant Belgian interest in the undertaking. The concluding paragraph was a parenthetical observation of the writer, and read as follows:-"How that Belgian interest was secured in New York space does not permit here to tell, but the episode throws an instructive sidelight on the unseen political undercurrents affecting the question."-THE EDITOR.

The British and Chinese Corporation's enterprises may be divided into two groupsviz., the purely British concessions referred to above, and those which are held in combination with capitalists of other nationalities. In the latter class, since the elimination of the Han-kau-Canton line from the list, there are at this moment the Tientsin-Chin-kiang railway and the Nan P'iao coal mines. In regard to the former the German syndicate is understood to be determined to carry out this undertaking, and preparations are being made for the negotiation of the final contract without delay. German interests being preponderant, theirs will, no doubt, be the guiding hand; but nothing is yet known as to any proposed modifications of the preliminary agreement, of which the terms are similar to those of the Lu-han railway. That the German Government is in a position to deal (and does deal) with these questions in Shantung in a manner very different to that of ordinary diplomatic negotiations has been sufficiently proved. In the case, therefore, the British and Chinese Corporation is doubtless justified in waiting upon events and taking the gifts of the Teutonic gods in due season.

In regard to the Nan P'iao coal field, close to the Shanhai-kuan railway, work on this promising undertaking had to be abandoned during the Boxer troubles, and it is only quite recently that the district has quieted down sufficiently to permit the resumption of operation being considered. The corporation shares this enterprise with the Chinese

Railway.

As to the purely British concessions at present held by the corporation as above described, there is little to be said, for the simple reason that since 1898 nothing has been done. On May 13 of that year the corporation signed a preliminary contract whereby they undertook to issue a loan not exceeding £3,000,000 (41/2 per cent at 82) for equipment, etc., of the Shanghai-Nanking railway. The terms of the contract are not less advantageous than those of the Lu-han and other lines; the cost of construction (estimated after survey) is admittedly much lower, while the financial prospects of the undertaking are certainly better than those of any Chinese railway concession. The district in question, teeming with an industrious people, has not been affected by the recent disturbances, nor has the price of Chinese Government stocks (to quote the usual clause in these contracts) "been affected so as to render the successful issue of the loan impossible on the terms named." If there is any explanation of the Corporation's action it has not been communicated to the Chinese Government; to the latter it is a matter of surprise, frequently expressed, that the corporation should not have withdrawn from these contracts, as it is entitled to do, on the ground of "political or financial crisis in Europe or elsewhere;" but of such intention there has never been any indication. The Corporation has adopted a policy of procrastination but British in tenacity.

Urged to abandon this policy, the Corporation in December last informed Shing Ta-jen that the original contracts had become unworkable, and the draft of an amended agreement, to be applicable to all the purely British concession in the Corporation's hands, was therefore submitted for his consideration in December last. It is to negotiate in the matter of these proposals that ex-Consul-General Brenan, C. M. G., is now en route for China; but unless he is empowered greatly to modify their present terms, his mission is not likely to be successful. Apart from a marked omission to recognize the usual "face saving" conditions as to China's sovereign rights of representation

and control, the financial terms named in the amended contract especially those referring to royalties and repurchase, are such that Sheng has declined even to discuss them.

It must be remembered that these concessions can not be alienated from British syndicates; international competition in regard to them is therefore precluded. Under these conditions the Chinese Government is naturally indignant at the nature of the demands advanced by the Corporation, and the latter's recent action in the matter of the restoration of the Pekin-Shan-hai kuan lines has, rightly or wrongly, intensified the bad impression already existing. It is to be hoped that since the British Government have rightly insisted on these concessions remaining in British hands, steps may be taken without further d ay to have them carried into effect and to eliel inate from them every suggestion of un-mritish methods. Such is the actual position of Bffairs. A few words now, in conclusion, as ao the political aspects. I alluded at the beginnting of the first of these articles to the apparent belief of the British Gevernment in 1898 that railway construction by foreign Powersin China-and in China it is essentially Powers, not individuals, that stand behind railway construction-might mean "loss of orders" to British industry, but little or nothing to Great Britain. It is only fair to suppose that subsequent events have materially changed this easy-going view and that the serious political side of the question is now adequately realized in Downing-street. Railways in North China mean armed guards to-day; in Manchuria, but for certain unexpected contingencies, they would already have meant permanent occupation of three provinces. From armed guards to exclusive control is but a short step; to differential tariffs and "favorednation" treatment a shorter step still. Already a "Chinese" railway is being used in Leaotong to carry goods into Chinese territory duty free, 1. e. to defraud the Chinese revenue of its just dues and to kill the seaborne trade of a treaty port, Newchwang. Already on a German controlled railway of Shan-tung the Chinese Government mails are refused the ordinary privileges and courtesy shown to German mail matter by the Chinese Government elsewhere. The railways of China are and will be so many political claims pegged out by the Powers that build them. By the Anglo-German Syndicate's agreement for the Tientsin Chinkiang trunk line, approved by both Governments, the British sphere of interest was defined to include the Yang-tsze Valley, the provinces south of Yang-tsze and the province of Shan-si. The spirit of this pact was shown in the German Claim, admitted and maintained, to "an entire monopoly of contract in Shan-tung." Since that date, however, German policy has neglected no opportunity of asserting a general "parity of rights" in the Yang-tsze Valley. The necessity for maintaining and carrying into effect those British concessions which the Government recognized as important four years ago has to-day become a matter of urgency.

As to the actual steps to be taken to this end, the question is one for the British Government to decide. If it is beyond the power of that Government to guarantee foreign loans, there are precedents which appear to afford an adequate solution of the

difficulty.

If British syndicates are really unable, in open competition, to finance railways in China under existing conditions, the fact must be accepted, and once established, after proper investigation made, would furnish conclusive proof that the railway undertakings of other Powers are not bona fide commercial enterprises. But the Government which took "official cognizance" of the Peking railway loan of 1899, which was ready to guarantee Japan's military expenses in 1900, and actually advanced funds to the Wu chang Viceroy in the same year for his provincial exchequer, should be able to devise means for lending a measure of effective support to those important concessions which, by its own action, have been proclaimed to the world as exclusively British.

## CHINESE IMPERIAL MINT, TIENTSIN, NORTH CHINA

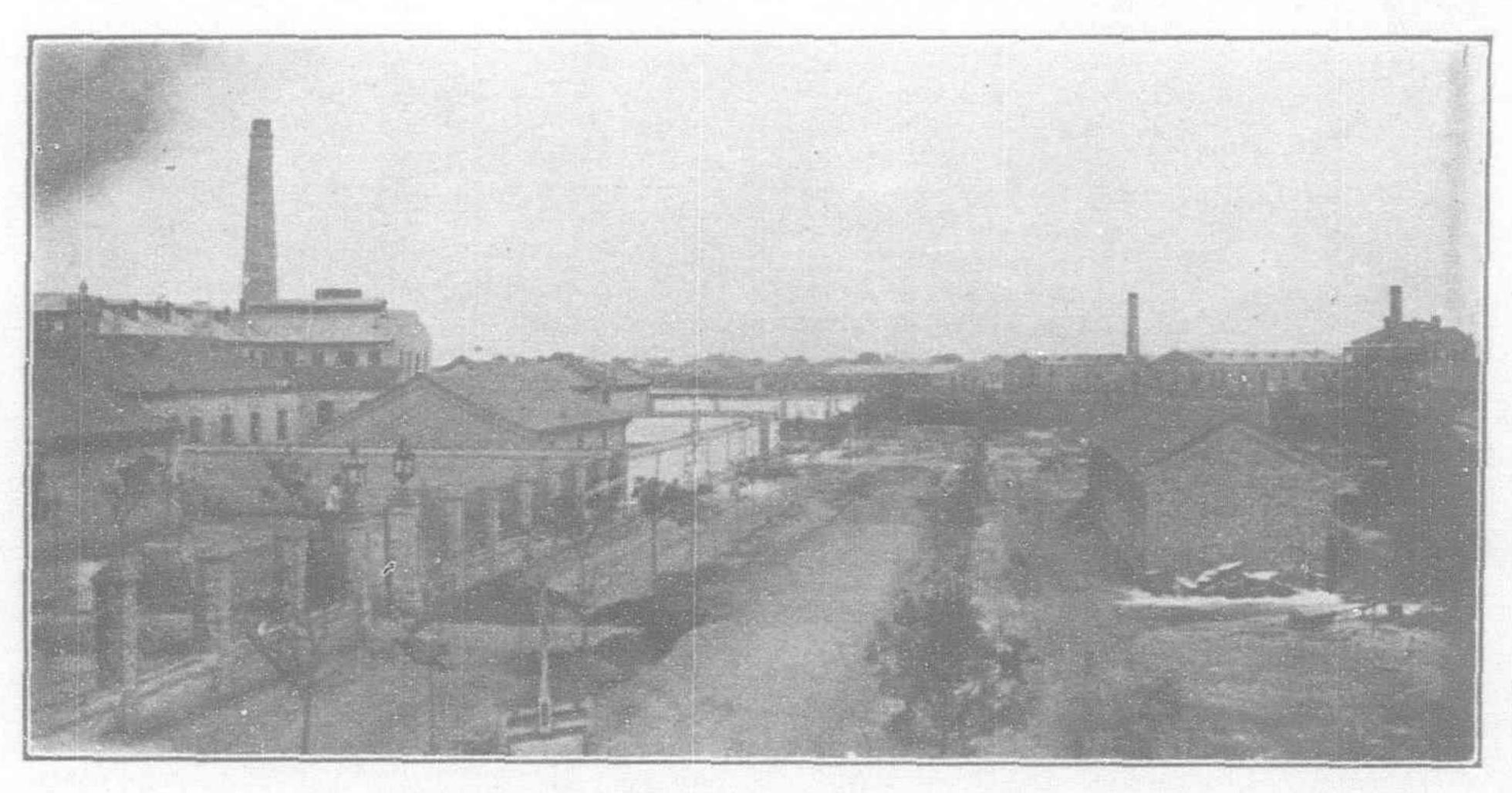
The new mint of the Imperial Board of Revenue (Hu Poo), at Tientsin, North China, was only recently completed and formally turned over to the Chinese authorities. For its size it is said to be the fastest mint in the world. The machinery is all of the latest type, and has been installed under the expert supervision of Mr. Lyle G. Emery, M. E., who was sent to China by the Treasury Department at Washington, D. C., to plan and construct the mint, at the special request of Viceroy Yuan. Mr. Emery had been superintendent of machinery at the United States mint, New Orleans, La., 6 yrs. prior to his transfer to China 3 years ago.

MACHINERY EQUIPMENT.—The Tientsin mint is equipped with 13 pairs of rolling mills. Seven of these have each a speed of 75 r. p. m., and

coins. Each tube has a capacity of from 200 to 400 pieces of money per minute according to the size of the coins.

There are 11 presses in the installation, 7 of which stamp out 100 coins each per minute and 4 of which turn out each 125 coins per initiate, or a total of over 650,000 coins per day of 10 hrs.

In addition the mint is supplied with all the latest improved facilities for melting the copper, cleaning the coins and coping with all the other little technicalities which arise in the process of minting money. The melting department is also something entirely new in China, and is a great improvement over the old methods in use in China in the past and at the present time. The crucibles of the Tientsin mint are twice the size of those in other Chinese mints.



CHINESE IMPERIAL MINT AT TIENTSIN.

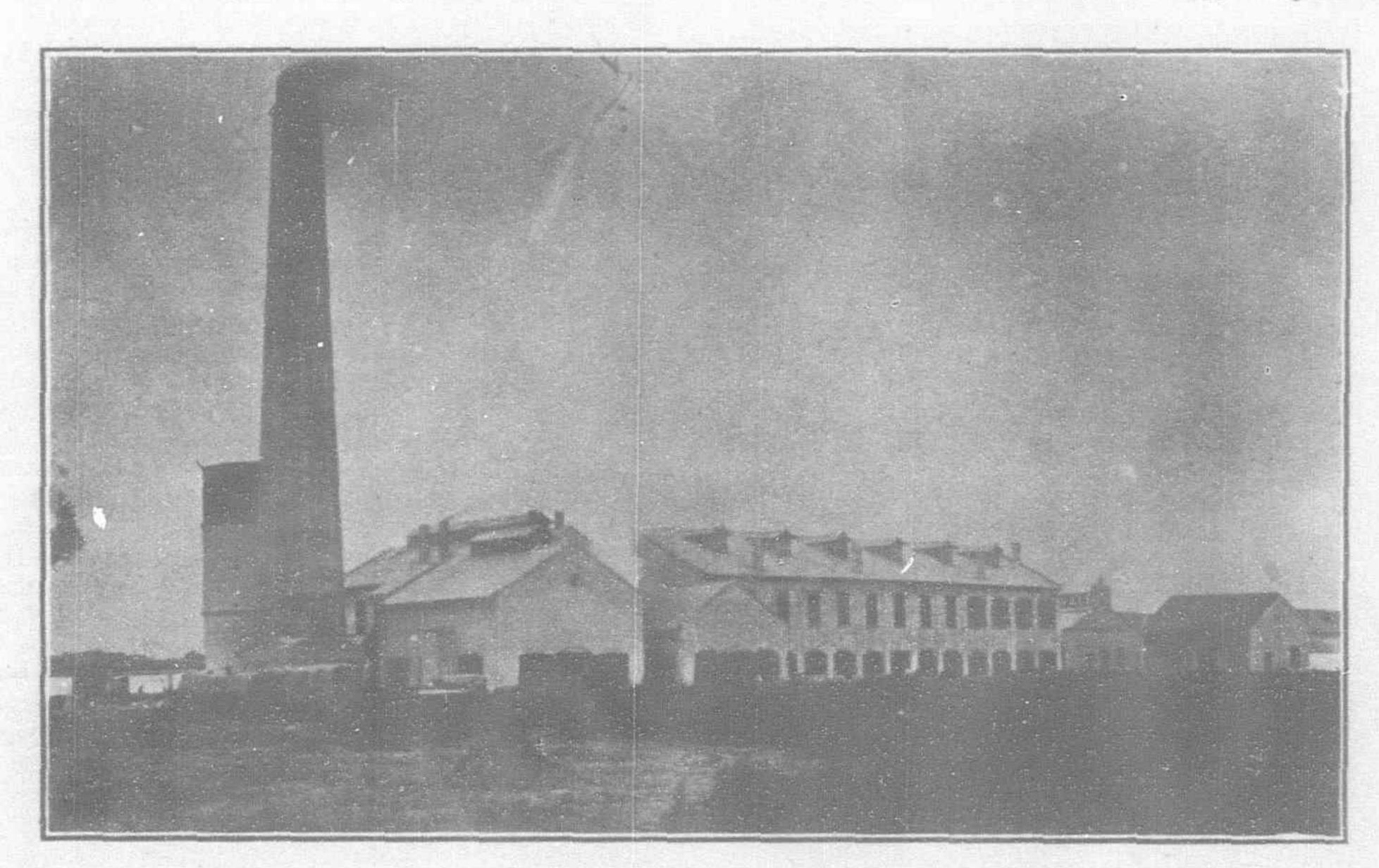
6 pairs attain each a speed of 85 r. p. m. The rolls are different in arrangement from those of any other mint in China in that they are all operated independent of each other. They are all belted and run from the crank-shaft of the engine, and any one of them can be thrown out of commission when necessary, thus avoiding a shut-down if any of them get out of order.

There are 3 punches each with a speed of 160 r. p. m., and as they punch 2 or 3 coins at each revolution they are good for from 320 to 480 coins per minute.

Five milling or upsetting machines are also an installed, each supplied with 3 tubes for feeding

They are never taken from the fire until worn out. The metal is dipped from the furnace and poured into the moulds thus saving not only time but over 50 per cent of coke fuel.

STRICTLY AN AMERICAN MINT.—The Tientsin mint is strictly American in all its details. The mint machinery, consisting of rolls, punches, presses, milling machinery, shears and melting apparatus, were furnished by the Johnson Iron Works of New Orleans, La.; the engines, boilers, and transmitting machinery by the Vilter Manufacturing Company of Milwaukee, Wis. The engine is of the Corliss type of the latest design, and has a capacity of 250 h. p. under 80 lbs. pressure of steam, and of 390 h. p. under



ANOTHER VIEW OF THE CHINESE IMPERIAL MINT AT TIENTSIN, SHOWING STACK AND POWER HOUSE.

the latest American return tubular, and are rated at 150 h. p. each. Three of these constitute the mint's boiler battery, and they can be used singly or collectively as necessity demands. The contractors of this plant are the well-known firm of Messrs. Arnhold, Karberg & Co., with Mr. William Pape, manager of the Tientsin branch, in charge, and like all the big contracts this firm has undertaken with the Chinese Government, it has carried out the erection of the Tientsin mint with great success.

#### JAPAN'S GUNPOWDER PLANT

The most complete, modern, convenient, and practical gunpowder plant in the world is said to belong to the Japanese Government and is located at Meguro, near Tokyo. All kinds of ordnance and blasting powders are manufactured at this plant, and 500 men are employed. Every department has its allotment of space, but not a foot is wasted, nor is there anything superfluous about the massive buildings and their equipment. A narrow gauge railroad leads through the main street for the full length of the factory grounds, and overhead a wire-rope power-transmission connects all departments. Though modern in every respect, the plant is none the less Japanese in appearance. The corners of the roofs of the buildings turn up, and there are many details in every department carried out after Japanese ideas. Five or six thousand pounds of finished material is turned out daily, yet grounds and buildings are kept clean and neat.

#### RAILWAYS IN SOUTH CHINA.

The Canton (China) correspondent of The North China Daily News writes that while in the N. of China railway construction is being pushed forward, the energies of the people of the S. seem to be expended in mutual congratulations that the agreement with the American-China Development Company has been squashed, and the concession, rashly granted, bought back into the "safe keeping of the Chinese." Representatives of the Kwangtung millionaires were deputed to send congratulatory telegrams to Chang Chih-tung, by whose energy it appears the present arrangement was reached. The "famous" viceroy has in turn distributed shares of honor to whom honor is supposed to be due, and adds that the gentry of the three provinces must now put forth their best energies, and consider what can be done with a view to the inception of the work. The prevailing spirit appears to be one of exultation that the great undertaking has been wrested from the hands of the Americans, without any expressed regret that the work will be indefinitely postponed. The same spirit is manifested in Canton in regard to the projected line S. into Yunnan, which is to attach itself to that of the French Railway in Kungchaowan. Appeals have been sent to the Kwangtung viceroy at Canton urging that this line be undertaken jointly by the French and the Chinese. The suggestion, however, is rejected, without any hope that, with further discussion, it might be entertained. The reply affirms that the most important point to keep in view is that the officials shall have control of the line and therefore there can be no joint action with the French and Chinese. Thus the most powerful consideration, which is influencing the minds of the officials, appears to be not that railways shall be laid down as rapidly as possible, but that every conceivable hindrance shall be placed in the way of foreigners having anything to do with them, when, at some future time, the work shall be undertaken. It would seem, therefore, as if there were some genius, evil or otherwise, at work in the S. whose influence is wanting in the N., and so while great things are being attempted there, nothing is being done in the S. except to "sit tight."

#### CHINESE ENGINEERING AND MINING COMPANY, LTD.

The shareholders of this company held their annual general meeting in London on Friday, October 27th, when the directors' report and accounts for the fiscal year ended February 28th, 1905, were submitted. The net result of the year's transactions showed a balance to the credit of profit and loss account of £153,355, made up as follows.

£1,393 £5,690	£204,398
	£7,086
	£211,484
£6,085 £27,794 £10,000 £3,250 £11,000	£58,129 £153,355
	£6,085 £27,794 £10,000 £3,250

Which the directors recommended appropriated as follows:	should be
In placing to reserve for depreciation. In paying a final dividend of 1/ per	£40,000
Making a dividend of 10 per cent for the year with the interim divid-	£5,0000
end of 1/per share paid on 22nd June, 1905	£50,000 £13,355
	£153,855
	COMPANIES OF THE PARTY OF THE P

#### MINING IN FRENCH INDO-CHINA.

Official classification places mining operation in French Indo-China in three categories: (a) Mines granted with full proprietorship; (b) application for grants under consideration; (c) prospecting concessions. This classification is that adopted for Tonquin and Annam. It is somewhat different for Laos and Cambodia, which are not under the same mining laws.

In Tonquin the most important mines are: Hon-gay mine, owned by the Société Française des Charbonnages du Tonquin which employs about 3,000 workmen-Chinese and Annamites. The total output in 1903 amounted to 267,333 tonnes, compared with 316,618 in 1902. The financial position of the Société des Charbonnages du Tonquin is very flourishing. Another mine, the Kebao, is worked by the Chinese and Annamite contractors. The company is contented to sell the coal at a sale price above the cost of thus working. The output of the Kebao mine in 1903 amounted to 5,586 tonnes, and 1,463 tonnes during the first quarter of 1904. The Schoedelin mine has been worked by contract since October 1902 by the Heritiers Sarran. The approximate output in 1903 was 5,000 tonnes. A small railway, 32 kilometers long, was constructed from the mine to the arroyo on which the coal is conveyed to Haiphong. Besides these, there are the Saladin mine, not worked in 1903, and the Tannhuan mine (lignite), which is situated about 3 kilometers from the termination of the Dong-giao, a little beyond Ninh-binh on the Hanoi-Vinh railway, to which it is connected by a recently constructed industrial railway. In 1903 three small excavations were made.

The metal mines are the following: Ste. Joséphine (gold, tin, silver, and mercury), Ste. Adele (tin and gold), and the Beau Site (tin). These mines, lying in the District of Caobang (Nguyen-binh), are alluvial tin deposits. In the N. and W. they touch the foot of the imposing Pia-Ouac mountain, 2,000 meters high. Veins of quartz, with cassiterite and wolfram, are very conspicuous in the granulite countries, especially above the Beau Site mine. The metamorphosed

schist and limestone also contain veins. The alluvions derive the useful mineral from the destruction of the veins. Ste. Joséphine mine is not at present worked. The Ste. Adele deposit, better known by its old native name of Tinh-Tuc, is worked open cast by sixty Chinese. Sluices are used, and work is finished with pans; thus a little gold is separated from the cassiterite. Two smelting furnaces of the Banca type produce, in pigs of 25 kilometers, a very fine tin, which is sold in Indo-China and China. The total output of smelting since commencement of work is about 30 tonnes. The Beau Site mine employs fifty Chinese workmen. The ore is not treated on the spot, but sold at Singapore after concentration.

The most important prospecting for gold is that made in 1903-04 at the Moson alluvial gold mines. Until recently they occupied about 40 Muongs and 250 Chinese coolies. The latter have been disbanded subsequently to a mutiny. Some prospecting work—trenches or borings-was executed in 1903-04 in alluvial deposits, near the Pia-Quac, within the perimeter of the Ganymede, for tin, and in various parts of the Song-Hiem Valley for gold. No auriferous or stanniferous veins have as yet been struck. In the Pia-Ouac district two veins, although their value is not definitely stated, may be mentioned. The first essentially consists of quartz containing wolfram. It is very distinct, and I meter thick, and lies in a rise some tens of meters long in a spur of Pia-Ouac, not far from Tinh Tuc. At various levels there are old galleries constructed by the Chinese mining for cassiterite associated with wolfram. The second is the Tong-Tinh vein, represented by traditions as an argentiferous quartz ore, which was actively mined. The outcrop is concealed, but the old Chinese workings, the openings of which are yet visible, seem numerous and bear witness to the existence of the deposit, which seems to be in contact, or nearly so, with the metamorphosed limestone and schist. To the S. of the Pia-Ouac, in the region of Ngan-Son, there are auriferous quartz veins with gold sometimes visible, now becoming known. These discoveries are in their infancy, and though no prognostications can be made for the moment, they deserve mention.

#### IMPROVEMENT OF CHINA'S HIGHWAY.

Everyone knows that the old highways of China, both on land and by water, are numerous, important, and neglected, says the North China Daily News. In the rivers there are often rapids, like those in the Upper Yangtsze, altogether beyond Chinese skill to remedy. In many other cases Oriental apathy contents itself with the aphorism that "water should be allowed to take its course," and seldom interferes. In the Yellow River, however, there is a periodical pretence of protection for the people, not because this stream is a highway, but because its inundations threaten the land tax from scores of counties. If its vagaries were radically cured by scientific engineering, hundreds of Chinese officials would annually be the poorer by scores of thousands of taels.

The Grand Canal is by far the most important of China's artificial waterways, extending from Hangchow, the southern capital of Kublia Khan, to Cambalu, the northern one, or rather to a city in Western Shantung, where entrance is made to a small but important river debouching into the "Sea River" at Tientsin. The excavation of this channel, while a most audacious undertaking for those "middle ages" when nothing of the kind existed in Europe, was a comparatively simple matter to a monarch who had the idea once formed and the labor to accomplish it. Its purpose was to provide an inland through route for the delivery of the tribute grain from Central China to Peking, at a time when sea voyages were difficult and uncertain. Advantage was taken of naturally lacustrine districts, the resultant commercial benefit to several provinces being immediate

and permanent. Increasing use of steam navigation long ago abolished the usefulness of this great line for its original purposes, but it was only 3 yrs, ago that the last traces of this strange amalgam of rice transport combined with unlimited licensed smuggling was definitely suspended. As a result many lucrative posts have been abolished, and a considerable stretch of the canal (between the Yellow and the Wei Rivers) has fallen into complete disrepair and became useless. There are natural difficulties to be overcome from vagaries of the Yellow River, the gradual silting up of the canal, and the occasional transit of mountain streams across its course, with which Chinese engineering does not know how to deal. With indomitable Chinese patience, the crews of whole fleets of craft simply await the slow accumulation of water to float them in a "lock" I m. long between the gates, or else take a devious course through broad lakes where winds and waves may make travel difficult or impossible.

For the remedy of all this waste there are three requisites—enterprise, moderately honest officials, and funds. All three are lacking, and now that it is no longer a question of tax transport, the government takes no further interest in the matter. It is not otherwise with those land routes in distant parts of the empire. Long trains of pack-animals, coolies, and travellers thread these difficult, toilsome, and not infrequently dangerous, trails. But let a landslide or an exceptional freshet supervene, and the poor wayfarer will probably have to wrestle with fate unaided. Whose business is it where he goes, or when, or how? Some important mountain passes like that leading from Central Chihli to the capital of Shansi, or the one from Peking to Kalgan, are indeed sometimes improved, the former largely (or perhaps altogether) by private benevolence, a too frequent instance of practical public spirit. It is the great so-called "imperial roads" (yu lu), such as that from Peking to Central China through Paotingfu, or that from Peking to Nanking through Chihli, Shantung, and Anhui, that show the most utter neglect. Broad roads once lined with great trees have been worn down much below the surface of the adjacent land which thus drains into them, making them for months together shallow canals but impassable alike for boat or cart. During this period travel is suspended as in a polar night. When it timidly and with difficulty recommences, it is forced to make detours into scarcely less impossible country by-roads. After some months the winds and the sun—the only road contractors in China-have done what they can, the carts once more grind the dried mud into clouds of friable dust with which the air is filled, and business again looks up and content reigns. It is only the meddlesome foreigner who wants to know why "the governor" does not order "the district magistrates" to mend these roads. But what if he should "call spirits from the vasty deep," would they come? Alas! no, the D. M. would wait 6 mos. and then report that he could find no precedent for such action; that to elevate the road would take thousands of men hundreds of days, and would require tens of thousands of taels of silver. Where, too, is the earth to come from? Where is the road to drain to, since it is already a natural gutter? The people of his district are poor and ignorant. But they are also stupid and obstinate. They are already heavily weighted down by "foreign indemnity" (artfully expanded threefold by local manipulation); to compel them to wrestle with an interprovincial highway, would surely cause trouble. It is an "imperial highway," and nothing to them. Its condition is just as bad in the district on the N., and much worse in that to the S. The progressive governor may reply to the argumenta, but he can not create enterprise, honest subordinates, much less funds, and so the matter drops where it began. And there, for aught that we can see, it must lie indefinitely. For the inevitable railway tends, we fear, to postpone highway amendment into the remote future.

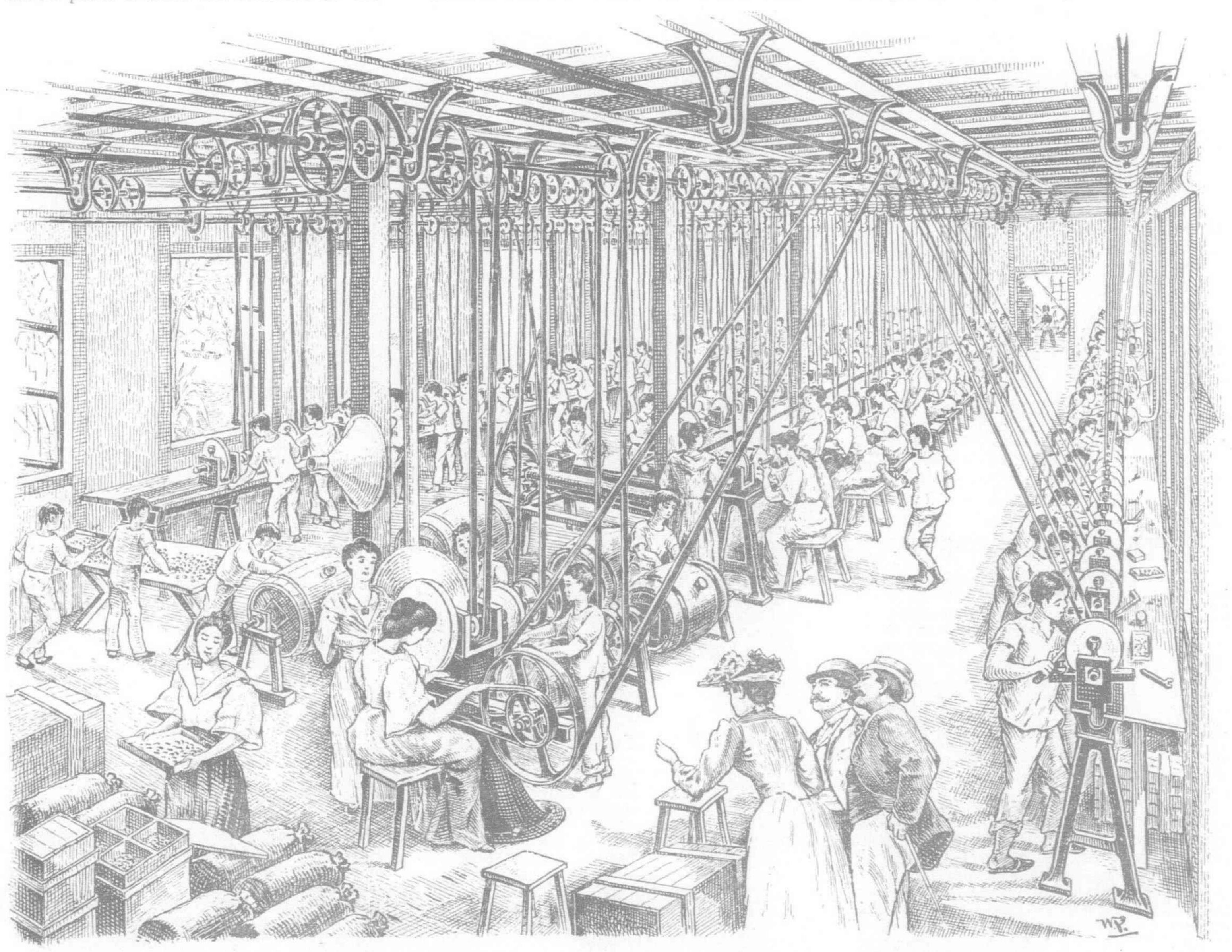
## "LA CONCHA" BUTTON FACTORY, LTD., MANILA, P. I.

One of the growing industrial enterprises of Manila is that of "La Concha" Button Factory, Ltd., whose plant is located in the suburb of Pandacan on the bank of the Pasig River. The building is of stone and galvanized roof and its dimensions are 30 by 10 meters. It is equipped with 54 modern machines, which, together with all other machinery, were imported from Europe in 1904. The motive power is steam and sufficient for the

orders can not be immediately delivered as there is not sufficient machinery. About \$7,ood worth of buttons are used monthly in the Philippine Islands, and, to supply this demand, more machinery will be imported. It is also intended to manufacture buttons of bone and horn, the raw material for which can be had here at very low prices. For these buttons there is very great demand. There is a further demand for articles such

pocket-knives, which can not be filled for the same reason. A great revenue is expected from these articles and also from the export of buttons in the rough, for which there is also demand from European manufacturers.

To make the output of the factory fully P 12,000 monthly, so as to fill all orders for local consumption and export trade, the company has set aside \$\mathbb{P}\$ 35,000 with which to purchase and install the extra machinery. With this increased facility it is confidently believed that a minimum dividend of 20 per cent per annum will be paid.



"LA CONCHA" FACTORY WITH A CAPACITY OF 30,000 PEARL BUTTONS PER DAY.

installation of many more machines. The company began active operations in August, 1905, and since then a European foreman has taught, so far, 60 Filipinos how to operate the machines with the result that at the present they are capable of turning out 150 gross of buttons per day, only 50 gross behind the full capacity of the plant.

Just now the product of the factory is exclusively confined to mother-of-pearl buttons which are placed upon the market in every style and size. These buttons can be made here much cheaper than those imported from Europe can be sold, for the reason that the shells have to be exported from here to the continent, the but tons manufactured there and returned to Manila. Thus the freight, duties, etc., are eradicated from the pearl button business here when the trade deals with "La Concha."

Ever since the establishment of the factory the importation of mother-of-pearl buttons has greatly fallen off, and today this industry supplies nearly the whole needs of the market. The company is already on a paying basis. About P4,000 worth of buttons are manufactured monthly and over P6,000 worth of back

as napkin-rings, teaspoons, handles for umbrellas, studs, hair combs, and all other fancy articles manufactured from mother-of-pearl, and while the company actually has orders for such articles it is unable to handle the business until the new machinery is installed. The company also has orders from Europe for sheets of mother-of-pearl, for the handles of

"La Concha" Button Factory, Ltd., has a capital stock of ₱ 75,000, and the following well-known business men of Manila compose the board of directors:-Dr. Benito Valdez, president; E. E. Elser, treasurer; Clement Schwinger, managing director; Carl Roeper, factory manager, and W. Partier, secretary.

## NOTICE Lloyd's Register of British and Foreign Shipping

The undersigned, having been appointed Surveyor at the Port of Manila, vice Mr. A. Forbes Greig who has resigned through ill-health, will carry on the work of the Society at the following address:

## WILLIAM SWANN

Consulting Engineer and Marine Surveyor

OFFICE OF FINDLAY & CO. 25 PLAZA DE GOITI

SANTA CRUZ, MANILA.

## FAR EASTERN ENGINEERING AND CONSTRUCTION NEWS

RAILWAYS, SUPPLIES, ETC.

MASANPHO RAILWAY, KOREA.—This line has been opened to traffic.

KOWLOON-CANTON RAILWAY. - It is understood that British engineers will make the survey of this line.

PEKING-KALGAN RAILWAY.—Tenders are invited for the first section of this line, from Fengtai to Nankou.

TIENTSIN-CHINGIANG LINE.—An effort is now being made to induce the Chinese Government to build this railway instead of the Anglo German enterprise

PEKING KALGAN RAILWAY, CHINA.—The machinery and materials for the building of this line are to be imported free of duty, the request being granted by imperial rescript.

CHINESE EASTERN RAILWAY, MANCHURIA.—Japanese troops have formed a garrison for the protection of this railway. This duty is under the direction and control of the Governor-General of the province.

Anorher Imperial Railway, China.—Owing to the frequency of the Empress Dowager's visits to I Ho Yuan, it has been decided by the Chinese Government to connect this place with Peking by rail.

Foreign Railway Shops Barred, China.—No foreign railway shops are to be allowed at any of the stations along the Chentow-Hsihchiachuang Railway, and those already existing at these places are to be closed forthwith.

PEKING-HANKOW RAILWAY.—According to the native papers of Shanghai the opening of the Peking-Hankow Railway, with festivities at the new bridge over the Yellow River, was set for the 15th day of the current month.

BIG PURCHASES OF MATERIAL FOR JAPAN.—Six Japanese railway representatives recently arrived in Chicago, en route for England and Europe. It is reported that they will purchase supplies to the value of £6 000,000, chiefly from American and British manufacturers.

LUKOKIU-HANKOW LINE.—The railway from Lukokiu to Hankow, China, is nearing completion, but owing to the importance and magnitude of the work of bridging the Whang Ho, nothing will be done in this matter until after an inspection of the proposed site by high government officials.

ANHUI-KIANGSI RAILWAY, CHINA.—It has been suggested that money for the construction of railways between Anhui and Kiangsi might be raised by means of lotteries, but a censor has pointed out that winning numbers might fall into the hands of foreigners so the idea is not likely to be carried out.

Government, according to the Hongkong Telegraph, states that the construction of the railway across the wild tract of country in the Giran District has been completed. The total length of the line is about 14 m, and construction was begun in August, 1904.

Nippon Railway, Japan.—The Nippon Railway has been compelled to withdraw 100 freight cars from the coast line, on which 250 cars had been hitherto used for the transportation of coal. Of the remaining 150 cars, 135 are to engage in transporting coal to orders under special contract, so that only 15 cars remain for carrying coal for the use of the general public.

Proposed Japanese Railway to Kirin.—Japan having obtained, as part of the terms of peace, the privilege of a railway between Kirin and Chanchun, it is pointed out at Tokyo that the distance between these points is about 90 m., and that the districts on either side are fertile. Gold dust and various metals, soda and coal are also found in considerable quantities.

TIENTSIN-CHIKIANG RAILWAY,—A Peking dispatch to a Shanghai native paper says that China has referred to the British minister at Peking a memorial regarding the cancellation of the Tientsin-Chikiang Railway Concession. The latter has informed China that the concessionaries are both British and German, and that should the German minister agree to its cancellation, he would have no objection.

RAILWAY IN FURIEN, CHINA.—The capital of the proposed railway between Foochow and Amoy, extending about 600 Chinese II, will be Tls.8,000,000. The scheme is that the capital shall be supplied by the Chinese. Though there are several French capitalists in Foochow who are trying to get the concession, the metropolitan officials who are natives of Fukien have been able to get their scheme carried out without foreign assistance.

DEVELOPMENT OF WHAMPOA, CHINA —For the purpose of making Whampoa a business center and constructing railroads thereto. His Excellency Chang Yat Shi, Minister of the Board of Commerce, who was formerly a prominent merchant in the Straits Settlements and had amassed an immense fortune, has gone to the Straits with a view to raising funds to carry out the scheme. It is reported that \$5,000,000 will be required for the development of the place.

RAILWAYS IN KOREA.—Railways are springing up all over Korea. The latest scheme comes from the Province of North Chulla where the arrangements for constructing a line between Kunsan and Chonju are said to be progressing satisfactorily. A joint company with a capital stock of -Y-300,000 is to be formed, and the work of construction will begin as soon as official permission has been granted. The embryo company announces in advance that it expects to pay a dividend at the rate of 20 per cent.

CHINA AND THE MANCHURIAN RAILWAY.—H. E. Na Tung, Chu Hung-chi, and Hsu Shih-chang have memorialized the Throne to the effect that they consider the Chinese Eastern Railway to be the backbone of the three eastern provinces of Manchuria. They, therefore, consider it necessary that the railway should be restored entirely to China, and they quote, as an instance of the way it should be done, the example of the Chihli public loan raised by Viceroy Yuan Shih-kai. They suggest, therefore, the flotation of another domestic loan for this purpose. The l'eking (jovernment has ordered them to give a more detailed report on the matter.

#### ELECTRIC LIGHTING, TRACTION, POWER, ETC.

YOTSUYA-TO-AOIMACHI ELECTRIC LINE, JAPAN.—This section on the Tokyo Electric Railway has been opened to traffic.

AMALGAMATION OF ELECTRIC LIGHT INTERESTS, JAPAN.

The Hokkaido Electric Light Company has amaigumated its interests with those of the Sapporo Electric Light Company.

ELECTRICALLY DEVELOPED WATERPOWER.—The total waterpower used at the present time for the production of electricity is about 2,000,000 hp. Japan has 3,450 hp. and India 7,050.

SIAM ELECTRIC COMPANY, BANGKOK.—This corporation has purchased a 500-kw, 550-volt, direct-current, 2-stage Curtis steam turbine alternator, several directcurrent pump motors and a switchboard.

TELEPHONE EXTENSION IN KOREA.—A telephone will soon be established between Masanpho, Taiku, Gensan, and Chinnanpho, and between Mokpho, Kunsan, Kangkyong, Kaisong, and Phyongyang during the next year.

J. G. White & Co., Ltd.—This branch of the engineering and contracting firm of New York, London and Manila, is busy just at present with new electric traction work for the London County Council, involving \$800,000 gold.

ELECTRIC RAILWAY COMPANY, MOJI.—Nine prominent Japanese capitalists have applied to the Tokyo Government for permission to organize an electric railway company at Moji with a capital of -Y-700,000, with the object of transporting passengers and goods between Moji and Kokura.

Wireless Telegraphy, China.—The Chinese Government is reported to be arranging with a foreign engineer to put up wireless telegraphy at Wuchang, Shanghai, Nanking, Peking, and Tientsin. There are a number of native students studying the system at Peking and also at Tientsin.

OSAKA ELECTRIC LIGHT COMPANY, JAPAN.—This company is building a branch at Sasebo and intends to supply the town with about 6,000 lights. At Osaka and Sakai the number of lights supplied by the company is rapidly increasing, the growth in one month recently amounting to 1,500.

CIRCUM OUTER-MOAT TRAMWAY, TOKYO.—The Yotsuya-Akasaka section of the circum-outer-moat tramway (Tokyo Electric Railway) has been opened to traffic, the circle being now completed with the exception of a short distance between Toranomon and Aoizaka, for which the company issues transfer tickets.

LIGHTING PLANT FOR FORT WILLIAM MCKINLEY, MANILA, P. I.—The Secretary of War at Washington has approved the expenditure of \$48,000 for the erection of an electric lighting plant for Fort William McKinley. Plans and estimates are soon to be given to contractors by the chief engineer officer of the Philippines Division so they can bid on the work.

Cooper Hewitt Lamp in Japan.—An exhibit was recently given of the Cooper-Hewitt lamp to the Japanese Emperor. The occasion was the graduation exercises of the Tokyo Imperial University. The Emperor attended the ceremony as an exceptional case, as he very seldom goes out of his palace. The head professor of electrical engineering. Professor H. Nakano, a post-graduate of Cornell University, class of '89, had the honor of explaining the workings of the lamp before the Emperor, which was supplied by the Japanese Engineering and Contracting firm of Messrs. Takata & Co., who are agents for the Westinghouse Electric and Manufacturing Company in Japan.

AMERICAN ELECTRICAL SALES, JAPAN.—The General Electric Company has received orders from Messrs. Mitsui & Co., Tokyo, Japan, for one 3-phase, revolving-field, 200-kw, 60-cycle, 2,300-volt generator and one 110-volt, 7-kw direct-current marine generating set with switchboard. Another order for the Kosaka Copper Mines, Japan, consists of one motor-generator comprising a 100-hp, 3,120-volt induction motor, direct connected to a 75-kw, 550-volt, direct-current generator. In addition to the above, a recent order

includes 28 m, of single-conductor, lead-covered wires of various sizes, and 22 m, of stranded lead-covered cables of various sizes. Messrs, Grant & Co., Ltd., are Manila agents of the General Electric.

Pacific Carrying Trade.—Mr. S. T. E. Gibbon, one of the vice-presidents and general counsel of the San Pedro, Los Angeles, and Salt Lake Railroad Company, has sailed for the Orient from San Francisco to consummate arrangements, it is believed in American railway circles, for a steamship line from San Pedro in Southern California to China and Japan It is further reported that the proposed steamship line will be controlled entirely by United States Senator W. A. Clark, of Montana, and be operated in connection with the Clark railroad system, and entirely independent of any similar line which Messrs. Harriman or Huntington may have in mind.

Cables to Japan.—The Formosa cable route to Japan has been working slowly of late. In normal times there are four such routes to Japan. Two of them, from Vladivostok to Nagasaki and from the southern extremity of Korea to Japan, have been closed in consequence of the war. A direct cable from Shanghai to Nagasaki has been carrying nearly all the messages since the beginning of hostilities, and there is also a roundabout route via Formosa and the Liu Kiu Islands from Foochow, China, to Ohama, Japan. The Shanghai-Nagasaki cable was recently interrupted by typhoons, and for a time dispatches were received for transmission by steamer from Shanghai to Japan, 500 m away

STEEL SCREW STEAMER Claverhill.-The steel screw steamer Claverhill, built by Messrs. Craig, Taylor & Co., Ltd., Stockton-on-Tees, to the order of Messrs. E. Haslehust & Co., London, has been given a successful trial trip at sea. The vessel is of the following dimensions: -369 ft. by 49 ft. by 28 ft. 9 in. moulded. She is built of steel to the highest class in Lloyd's under special survey. The engines have been constructed by the North-Eastern Marine Engineering Company, Ltd., Sunderland, having cylinders 26. 42 and 72 in. in diameter, by 48 in, stroke, with three large steel boilers working at 180 lbs. pressure. Over a course of 6 m. a speed of 121/2 knots was maintained. The vessel has loaded for the Fart East under charter by the Nippon Yusen Kaisha.

#### PORT WORKS, DREDGING, DOCKS, ETC.

THE DINDINGS, STRAITS SETTLEMENTS.—The cost of survey of the Dindings is estimated at \$40,000 of which \$10,000 will be expended next year.

RECLAMATION AT CANTON.—There is a movement on foot in Canton, China, which has for its object the raising of funds for reclamation works. It is estimated that from Chin-Loong-How to the Loong-Mo Temple, 10,000 tseng (Chinese acres) of land could be reclaimed and another 10,000 tseng from the Loong-Mo Temple to Wongsha. The total amount of money which this scheme is expected to realize is \$2,000,000.

Kiangnan Dock, Shanghal.—The new Kiangnan dock is making rapid headway and should be finished and ready for business about the date this issue of The Far Eastern Review goes to press. New machine shops, etc, are also being 'erected, and when completed the new work will be able to undertake any class of shipping construction. The new dock will have a length on top of 365 ft., on blocks 325 ft., and a width on sill of 19 ft.

NEW Dock, Hongkong.—A contract for three patent slipways to be laid down at Hongkong has been placed with Messrs. S. and H. Morton & Co., of Leith. One of these slipways is to be capable of taking up vessels 400 ft. long by 40 ft. beam and of 2,700 tons weight. The other two are for vessels 290 ft. in length by 50 ft. beam and weighing 2,000 tons. All are to be driven by electric power. The patent slipways are designed for the new dock which Messrs. Butterfield & Swire are building at Quarry Bay.

#### SHIPBUILDING, MARINE, ETC.

JAPAN'S NAVAL CONSTRUCTION. -The firm of Krupp, at Essen, has received from the Japanese Government an order for a supply of sheet-iron and guns for the Japanese fleet. The value of the order is said to be very large.

STEAMSHIP SERVICE EXTENSION, JAPAN.—The Nippon Yusen Kaisha will soon open a new steamship service between Japan, Singapore, and Java. The manager of the Hongkong branch of the company is now visiting the ports mentioned to make the necessary arrangements.

LAUNCH OF STEAMER HUICHOW.—Scott's Shipbuilding and Engineering Company, Greenock, have launched the steamer Huichow, the first of a fleet of six ordered from them by the China Navigation Company, London. The dimensions of the vessel are:—Length 267 ft., breadth 40 ft., depth 22 ft. 6 in., and carrying capacity 2,600 tons. The machinery will be supplied by the builders.

NEW NORDDEUTSCHE BRANCH LINE IN ORIENT.—This new branch steamship line will be known as the Austral-Japan Line. The point of departure will be Sydney, and outwards the ports of call will be Herbertshohe, Matupi, Simpsonhafen, Friedrich-Wilhelmshafen, Hongkong, Yokohama and Kobe, which will be the terminus. Homeward from Kobe, Moji, Hongkong, and Friedrich-Wilhelmshafen will be called at.

NEW STEAMSHIP LINE, JAPAN.—A new steamship company, called the Deshler Line, has opened business in Japan and intend to have a regular service between Japan, Korea, and Shanghai The steamers are all new vessels and are named Ohio I, Ohio II, Ohio III, and Ohio IV They will carry the Japanese mail and are scheduled to make regular trips. The vessels are excellently fitted up for first, second, and third class passengers, with electric lighting and steam heating throughout.

To Reflor Stinley Dillar.—The Yamashima Kaiji Kogyo-jo, Japan, has undertaken the refloating of the American steamer Stanley Dollar which was lately driven on the rocks off Katsuurs, Chiba, but the work will not commence until differences of views between the underwriters of the hull and those of the cargo have been settled. The wreck of Stanley Dollar was sold at public auction and realized-Y-27,250. The cargo of barley was sold for-Y-14,025.

#### WATERWORKS AND IRRIGATION

Chih-tung has raised Tls. 7,000,000 from the Hong-kong and Shanghai Banking Corporation, and Tls. 3,000,000 have already been paid, besides which the vicerov has received Tls. 1.000,000 with the object of establishing waterworks for Hankow. The construction of this plant has often been attempted but failed, owing to the difficulty of raising funds. A British contractor is attempting to get the contract for constructing the waterworks.

WATER SUPPLY, PENANG, STRAITS SETTLEMENTS.-The Municipal Engineer of Penang, Mr. L. M. Bell, reported recently on the proposed additional water supply there for Batu Ferringgi and other streams at the N. end of Penang Island. The report deals practically with three districts-Tanjong Bungah. Batu Ferringgi, and Telok Bahang. After giving comprehensive details concerning various streams and sources of supply, the Engineer shows that the Sungei Klean, in the Tanjong Bungah District is the cheapest and most expedient source of tiding over the present difficulty. The present supply may be put down at 4,500,000 galls, daily. According to one estimate from Sungei Klean an additional supply of 1,000,000 galls per day, costing 6 cents per 1,000 galls., may be obtained, the capital cost being \$330,000. It would be possible to lead the supply from Sungei Klean into the Waterfalls. This is the cheapest recommendation. On the other hand, if the municipality wishes to provide for the future, too, it may take up the Batu Ferringgi scheme, giving an addition of \$2,983,000 galls, costing 11 cents, the capital cost being \$1,853,000. Between these schemes there are two modifications,

#### MINES AND MINING

COAL MINES OF BUZEN AND CHIKUZEN.—The recent typhoon caused damage to the coal mines at these places to the estimated extent of -Y-2,330,000.

RECHAU GOLD FIELDS, PAHANG, F. M. S.—The company which has been promoting this enterprise has temporarily stopped all work owing to the principal lode on the concession giving out. The manager, Mr. E. A. Watson, has left his post at Lipis.

and iron are among the largest and most favorably situated in the world. The extent of the great coalfields has been put at 400,000 sq. m.—more than 70 times the aggregate extent of all the coalfields of Britain. It is expected that very soon Chinese coal will be delivered at Far Eastern ports at prices with which no other coal can possibly compete, and that China, in consequence of this development, will become a large exporter of iron.

Yunnan is trying to raise funds for the formation of a company to work the tin deposits at Tungehiu. The tin industry is the means of living for the people of Yunnan, and the principal article of export, the taxes on which are a large source of revenue. Owing to the capital being small and the works being destroyed during the trouble, it can not recover its original state. It is desired to combine officials and merchants and raise money for the formation of a company to work the tin. The shares will be 1,000 dragon dollars each Chinese capital only will be accepted.

FUSHUN (MANCHURIA) COAL FIELDS.—According to ret ports from the experts sent by the Japanese Government to Fushun, the coal deposits there must be regarded as among the richest in the world. The depth of the coal layers is stated to be nearly 66 ft. and the total quantity of coal is estimated at least at 300,000,000 tons. Estimating the value at -Y-10 per ton, the value of the mine is fixed at -Y-3,000,000,000. The quality of the coal is very good and is said to be superior to that from the Kiushu mines. The government intends to make use of the coal at the Edamitsu Iron Works It is not yet settled whether the government or private enterprise will develop the Fushun mine.

According to investigations made by the Financial Department of the Tokyo Government, the quantity of gold and silver produced in Tokyo and four other mining districts of Japan, and in Formosa up to the end of last June, was as follows:—

Mining Dis- tricts.	Gold. Momme.	Silver. Momme.
Tokyo	72,1°9 50,770	1,452,740 6,331,933 2,547,993
Pukuoka Sapporo Formosa	245,232 22,470 324,707	508,095 739,572

The estimated output of gold and silver throughout the country this year is 1,338,288 and 20,004,703 momme respectively—an increase of 158 kw mme in gold and of 1,972 kwamme in silver compared with the actual output of 1904.

#### BUILDINGS.

GERMAN ELECTRIC COMPANY, TIENTSIN.—The building for the new German Electric Light Company is nearing completion. It has been erected in a central position, between Deutsche and Rohrschied streets, facing the square. The German Concession is the last to be served with electric light.

RAILWAY STATIONS, JAPAN.—The Nippon and Kobu railway companies are building their own stations at Shinjuku, to take the place of the present one, which is now used by both companies. The Tokyo Street Railway Company has also commenced the extension of its station and car depot at Shinjuku.

ENGINEERING SOCIETY OF SIAM, BANGKOK.— Plans have been prepared for the erection of a building by this organization for its permanent home. They provide for a lecture hall and two rooms for other organizations with a separate entrance on the ground floor, and also a refreshment room, store, lavatory, etc. The first floor will be devoted entirely to the Engineering society, and provides a reading verandah, reading room, library, secretary's room and council room, and a spare room. It is estimated that the building erected on a suitable site will cost in all Tcs. 60,000. The members of the Home Committee, which is promoting the scheme, are Messrs. Th. Collmann, E. Sandreczki, and E. Bock.

WARING-WHITE COMPANY .- The Waring-White Company, of which Mr. J. G. White, head of Messrs. J G. White & Co., contractors and engineers of New York, London and Manila, is one of the principals, is the contractor for the gigantic Hotel Ritz, which is being erected in Piccadily, overlooking Green Park, London. This building is expected to be one of the worders of the European hotel world. It will cost upwards of \$5,000 000 gold. The steel superstructure alone will cost almost \$1,000 000. The company is also constructing the big offices of the International Mercantile Marine Company, of Trafalgar Square, which building is one of the most conspicuous of London. It is now nearly finished. Other London contracts include a large hotel to be called the Waldorf, built and equipped mainly on the lines of the Waldorf-Astoria of New York. Contracts have also been undertaken for the construction of two large apartment houses, one to be named Harley House, to be in the NW. residential district, while the other building is to be adjacent to the French Embassy, facing Hyde Park. The Waring-White people have also secured the contract for the new Liverpool Cotton Exchange. These buildings will be the first to be erected in England on the American method of self-supporting steel frame construction.

#### IMPROVEMENTS IN THE PHILIPPINES.

LUNETA RECLAMATION SCHEME, MANILA.—Work has been begun by the Atlantic, Gulf and Pacific Company on the seawall which will be necessary for the consummation of this improvement, and the company is under contract to finish the entire reclamation scheme with all possible despatch. It is believed that the extension will be finished by October, 1906.

FORT WILLIAM McKINLEY —Construction work still progresses at Fort William McKinley, near Manila, and there is much more in prospect. Plans and specifications for a military prison, a veterinary hospital and a crematory are now being prepared under the direction of Captain Horton, constructing quartermaster, and contracts on these buildings will be let in the near future. The prison will cost \$80,000, the hospital \$5,000, and the crematory \$7,000.

NEW HOTEL, MANILA.—Advertisements for the proposed hotel on the Luneta extension, to be constructed under government patronage, will be published about January 1st. The basis of the advertisement will be the offer by the government of a piece of land 600 ft. square in the reclaimed tract facing Malecon Drive on the E., the new Luneta on the S. and Manila Bay on the W. The person who agrees to spend the most money in the construction of the hotel will be awarded the land.

PUBLIC WORKS, MORO PROVINCE, -Captain F. R. McCoy, provincial engineer of the Moro Province, sends some interesting exgineering news to THE FAR EASTERN REVIEW through the Bureau of Engineering of the insular government. The general construction work of the province is under the supervision of Mr. C. F. Vance, C. E., assistant provincial engineer. Provincial Building .- The new provincial building, illustrations of which were recently published in this paper, will contain all the provincial, district and municipal offices in Zamboanga. It will be of concrete to the second floor, and the cement plaster will be laid on expanded metal. Plumbing supplies, the installation of electric wiring, the water system and the enumelled tile roofing have not yet been supplied. Dock Work .-The contract for building a new wharf at Jolo, Island of Jolo, has been awarded to the Atlantic, Gulf and Pacific Company, of Manila. This work is a pile structure 180 ft. by 36 ft. Molave piles will be used. All braces will be of Molave. The superstructure will be guijo, a native hardwood. Dock Extension, Zamboanga - Proposals will be requested in the near future for the extension of dock at Zamboanga Bridge Work, Zamboanga .-Two steel girder bridges are being erected on Calle Magay, Zamboanga. The structural material is being furnished by the Atlantic, Gulf and Pacific Company. Abutments and bridges are being erected by native labor under the direction of the provincial engineer. Road Work -- The construction of public highways in the Moro Province is under the supervision of Mr. A. D. Ritchey, C. E., junior assistant engineer. Roads under Construction. - Jolo-Asturias, Jolo; Davao-Santa Cruz, District of Davao; Iligan-Lake Lanao, District of Lanao; Zamboanga-Mercedes and Zamboanga-Santa Maria, District of Zamboanga. Native labor is being used exclusively on road work, superintended by American foremen. The provincial engineer says that Moros, under proper supervision, are excellent laborers and form the majority of camineros and permanent maintenance gang.

#### MISCELLANEOUS NOTES.

AMERICAN ENTERPRISE, KOREA —It is announced that an American syndicate, in connection with the development of Korea and Manchuria, is raising a capital of \$2,500,000 gold on the New York market.

MANUFACTURING FOREIGN GOODS, KIRIN.—The assistant Tartar general at Kirin intends to establish an industrial department for the manufacture of foreign goods, with a capital of Tis. 300,000 in 3,000 shares of Tis. 100 each. Foreigners will not be allowed to take up shares.

MESSRS. KELLY & WALSH, LTD.—This Hongkong firm of booksellers, stationers, etc., which, for the last 27 yrs. has been doing business under the shadow of the Hongkong Hotel, in Queen's-rd, recently removed to York Building, Chater-rd, where it occupies ideal premises for its business.

Australian Coal in Japan.—A Yokohama firm, in cooperation with Japanese dealers, intend to import Australian coal, according to the Japan-Times. The price for delivery at Yokohama will be about Y-12 per ton. At present Kiushiu coal is quoted at -Y-12 and Y-13, and as quotations are rising it is believed not difficult to import Australian coal at a profit.

OPENING UP MANCHURIA.—The Chinese Government has completed the investigation of the question of opening up Manchuria to foreign trade and decides that in addition to the towns opened for foreign trade in accordance with the stipulations of the Chino-Japanese and American-Chinese treaties, viz. Mukden, Antung, Tatung-Kou, the towns of Kirin, Ninguta, Hunchun, Hulangting and Tsitsihar will be opened for this trade.

COTTON CULTIVATION, KOREA.—According to an official Japanese report, the principal districts where cotton is at present produced in Korea are the Provinces of Pyeng An, Chol La, Chung Cheng, Kyeng Sang, Kueng Keui, and Whang Hai. The soil of these districts consists for the most part of disintegrated granite sand and friable earth, well suited for the cultivation of cotton; but the farming methods of the Koreans are primitive and insufficient, and the area of cotton under cultivation might, with improved methods and the use of proper manures, be greatly extended.

TRADE OF THE PHILIPPINES.—The excess in the value of exports over imports, exclusive of currency, for the fiscal year ended June 30th, 1965, was \$\mathbb{P}\_3,000,000\$, It is believed that this will almost be doubled during the current fiscal year, as the value of exports, exclusive of currency, for the first 9 mos. of the calendar year 1905, show an increase of \$\mathbb{P}\_{12,635,664}\$ over that for the corresponding period of 1904. The total export for that period in 1904 amounted in value to \$\mathbb{P}\_{39,386,339}\$ while for the same 9 mos. of 1905 they amounted in value to \$\mathbb{P}\_{52,022,000}\$. During that time the principal exports were hemp.

AMERICAN MACHINERY IN JAPAN, -During the years 1903 and 1904 the Westhinghouse Machine Company, of East Pittsburg, Pa., have sold in Japan no less than 56 Westinghouse engines, ranging from 600 h. p. down to 1226 h.p., and aggregating in capacity almost 8.000 h. p. They are all of the vertical single-acting type, both simple and compound. The list of consumers comprises government arsenals, railroads, electric light companies, bureaus, waterworks, mines, universities and hospitals. Among the more important orders filled are the following:-Akabane arsenal, 1950 h. p; Kure and Tokyo arsenals, 1628 h. p.; Kiushiu and Nippon railways, 579 h. p.; Yokoska arsenal, 47 h. p.; Fukagawa and Tokyo electric light companies, 450 h. p.; Mr. Furukawa's western bureau, 1265 h p.; Tokyo Imperial University, 93 h. p.; Yokohama Electric Wire Works, 62 h. p.; Tokyo waterworks, 31 h. p.

CHINESE BOYCOTT, FRENCH INDO-CHINA. - The Chinese merchants of Cholon, Saigon, wanted to boycott American goods following the example set them in China. In Tonquin the Chinese already commenced the boycott, and those of Cochin-China were going to join them in the campaign when M. Stang, chief of the firm of Denis Frères, at Saigon, who is also acting American consul, addressed the Government of Cochin-China on that subject, pointing out the harm which such a movement would do. For instance Cochin-China depends upon America for its supply of wheat and kerosene. The stock of the latter product on hand was 120,000 cases, and there were three more shipments to arrive in Saigon with 60,000 cases. The Chinese merchants at Cholon held their first meeting; the second meeting was set for a subsequent date, but the police stepped in and broke up the meeting. This stopped the boycott movement at Saigon.

TRADE OF STRAITS SETTLEMENTS. - The total value of imports of merchandise during the second quarter of the current year was \$83,085,670, as compared with \$82,493,512 during the corresponding period of 1904. Coin and bullion imported fell off in the 3 mos. from \$14,008,452 to \$3.010,233 From the different settlements in the colony the figures for imports stand as follows; -Singapore, increase from \$60,616,402 to \$61,004,018; Penang, increase from \$21,039,260 to \$21,131,497; Malacca, increase from \$837,850 to \$950,155. Total increase, from \$82,493,512 to \$88,085,670. The total value of exports from the whole colony was \$70,436,471 as compared with \$63 082 797 for the corresponding period of 1904. Exports of coin and bullion decreased from \$15,706,464 to \$4,3 2,537. For the different settlements the export figures were as follows:-Singapore, increase from \$48,928,494 to \$50,062,407; Penang, increase from \$13,302.641 to \$19,531.994; Malacca, decrease from \$851,662 to \$842,070. Total increase, from \$63,082,797 to

(Continued on p. XVII, advertising section.)

## FAR EASTERN STOCKS AND QUOTATIONS

COURTESY OF BENJAMIN, KELLY & POTTS, SHAREBROKERS, HONGKONG, October, 1905.

STOCKS	WHEN STAB-	CAPITAL,	NO. OF SHARES	VALUE	PAID UP	RESERVE	AT WORKING ACCOUNT	DATE	LAST DIVIDEND	WHEN	Approxima Return a Present Quotation	QUOTATIONS
	plot bed										PER CENT	
Banks.  Iongkong and Shanghai Banking )	1865	\$10,000,000	80,000	\$125	\$125	(g £1,000,000) s \$8,500,000 i \$250,000)	\$1,702,728	30-6-05	\$1.15/- at exchange 1/10½= ) \$18.66.67 for first half year }	21-8-05		\$900 seller London £9
(ational Bank of China, Limited	1891	€699,475	99,925	£7	£5			31-12-04	\$2 (London 3/6) for 1903	1-2-04		\$38 buyers
Marine Insurances.										22.10.01		daami/ hovers
anton Insurance Office, Limited	1881	\$2,500,000	10,000	\$250	\$50	( \$950,000)			\$17 for 1903			\$337½ buyers
hina Traders' Insurance Co., Ld	1865	\$2,000,000	24,000	\$83.33	\$25	j \$362,366			\$4½ for year ended 30-4-1904		5¾	\$79 sales
- Al China Innurana Co I d	. 262	( TEO 000	10,000	€15	€5	Tls. 800,000	Tls. 217,119	30-6-04	Interim of 7/6 for 1905	1-5-05	8	Tls. 82 buyer
orth China Insurance Co., Ld	1003	₹ 150,000	10,000	70 -0		(\$\$1,850,000)						
Inion Insurance Society of Canton, ) Limited	1867	\$2,500,000	10,000	\$250	\$100	g £20,000 f \$372,749 j \$893,100 u \$846,773	\$2,078,997	30-6-04	\$35 for 1903	21-1:-04	4 1/2	\$780 buyers
angtsze Insurance Association, Ld	1862	\$800,000	8,000	\$100	\$60		\$599,364	31-12-04	\$12 and \$3 special dividend for 1903	12-4-05	81/2	\$1721/2
Fire Insurances.						\$1,000,000)	\$260 271	21-12-04	\$6 dividend and \$1 bonus for 1903	10-3-05	8	\$87½ buyers
hina Fire Insurance Co., Ld	. 1870	\$2,000,000	20,000	\$100	\$20	x \$218,039					10	\$340 sellers
ongkong Fire Insurance Co., Ld	. 1868	\$2,000,000	8,000	\$250	\$50	\$1,200,505	\$360,372	31-12-04	\$34 for 1903	1300		40,34
Shipping. hina and Manila Steamship Co., Ld	1882	\$750,000	(1) 30,000	\$25	\$25	\$5,000			\$1 for 1904			\$18 sellers
ouglas Steamship Co., Ld			20,000	\$50	\$50	\$261,638 } 1 i \$88,941 j	Nil.	30-6-05	\$3½ for year ended 30-6-1905	25-9-05	.1034	\$32 ex div.
ongkong, Canton and Macao Steam- ) boat Company, Ld	1865	\$1,200,000	80,000	\$15	\$15	di \$600,000 )  f \$145,376			\$1 for first half-year 1905			\$2634 buyers
ndo-China Steam Navigation Com- )	-00-	£1,200,000	(2) 60,000	€10	£10	£ 120,000	£4,435	31-12-04	12/- @ 1/107-8=\$6.29.51 for 1904	13-7-05	61/2	\$95
pany, Ld §	1002					( h £3,999)		Line y	(Interim of Tls. 2. for 1905)	28-8-05	1 2/	Tis. 59 sales
hanghai Tug and Lighter Co., Ld ) Do. Preference )	1903	Tls.1,500,000	100,000	Tls. 50	Tls. 50	i Tls. 25,000	Tls. 43,762	31-12-04	Interim of Tls. 134 for 1905		(8	Tls. 47 sales
Shell" Transport & Trading Co., Ld.				£I	61	i £4,116	£ 58,852	31-12-03	Interim of 1/- (Coupon No. 5) for '04			
Star" Ferry Co., Ld	1898	\$200,000	( 10,000	\$10 \$10	\$10 \$5			30-4-05	\$1.80 \$5.90 cents { for year ended 30-4-05	29-5-05	1 334	\$25 sellers
traits Steamship Co., Ld	. 1890	\$500,000	(3) 5,000	\$100	\$100	\$400,000   e \$21,075   i \$130,153	\$21,231	31-12-04	\$10 for 1904	21-3-05	7	\$1421/2
aku Tug & Lighter Co., Ld		T.T 1,500,000	30,000	T.Tls.50	T. Tls.50	e Ils. 28,000	Tls. 4.333	31-12-04	Interim of Tls. 2 for 1905	27-7-05	1334	Tls. 29
Refineries						i Tls. 81,200				TR R 0	101/2	\$230
hina Sugar Refining Company, Ld	. 1878	\$2,000,000	20,000	\$100	\$100	\$450,000 1 \$150,000	\$42,812	31-12-04	Interim of \$10 for 1905	24-3-98		\$151/2 buyers
uzon Sugar Refining Company, Ld Perak Sugar Cultivation Co., Ld		The same of the sa			\$100 Tls. 50	The second secon	Tls. 1,635	30-9-04	\$3 for 1897	17-12-04	334	Tls. 68 sales
Mining. Chinese Engineering & Mining Co., Ld	TOOL	£1,000,000	1,000,000	£1	£I	\ d £40,000	£7,820	29-2-04	Interim of 1/- (No. 4)	1-7-05	-	Tls .9 buyers
riental Consolidated Mining Co., Ld						1 212,209	G. \$672,093	31-12-04	Interim of 50 cts. (gold) for '95 (No. 5)	11-7-05		G. \$17
Raub Australian Gold Mining Co., Ld.			150,000		18/10	£4,873	Dr. £8,745	31-3-05	No. 12 of 1/-=48 cents	28-1-01	-	\$4

STOCKS	WHI	CAPITAI,	NO. OF SHARES	VALUE	PAID UP	RESERVE	AT WORKING	DATE	LAST DIVIDEND	WHEN	Return at Present Puotation*	CLOSING
Docks, Wharves and Godowns.											PER CENT	
Farnham (S. C.), Boyd & Co., Ld			55,200	T100	T100	T1,000,000	T34,924	30-4-05	Final of T8 making T13 for 1904/0			There
Fenwick (Geo.), & Company, Ld	1905	\$450,000	2 12,000	£ \$25	\$25	\$70,000	Ø8		\$334 for 1904 on 6,000 shares	24.005	9/2/0	1144 sales
Godown Co., Ld	1886	\$2,000,000	40,000	\$50	\$50	\$250 000 d.r.\$58,423			( + 1150 ) Cal	a National	-	\$27 \$25
Hongkong & Whampoa Dock Co., Ld	. 1001	\$2 500 000	FO 000			1 \$10,000	1	31-12-04	Interim of \$2 1/2 for 1905	26-7-05	434%	\$104
New Amoy Dock Co., Ld	. 7802	1		\$20	\$50	i \$300,000	1					
Shanghai and Hongkew Wharf Co. Lt.	. Toos	\$40,500		\$634	\$634	7 7 645		31-12-03	\$6 for first half year '05 \$1 1/4 for '03	22-8-05	7	\$185 buyers
Yangtsze Wharf and Godown Co., Ld.	1902			Tioo	T100	7 T487,210	{T10,711	31-12-04	Y and the second		7	\$17 sellers
Lands, Hotels and Buildings.	1902	T250,000	2,500	T100	T100	T17,500	,T2,762	31-12-05	T18 for '04	23-0-05	0 /2 /0	Tr <sub>87½</sub> buyer
Astor House Hotel Co., Ld	****									29-3-05	9/4 %	Tig2 1/2 buyer
Astor House Hotel, Ld. (Tientsin)	1	8.10	(4) 30,000	\$25	\$25	\$14,156	\$9.028	30-6-05	\$21/ for more ondings to			
Central Stores, Ld		T. T100,000	2,000	T. T50	T. T50	T34,000 # T8,000	T806	20-2-05	\$2½ for year ending 30-6-05	19-8-05	9 %	\$28 buyers
Do. (Founders')		\$91,845	6,000	\$15	\$12	( € 18,000	)		Final of T5 making T9 for the year.			
Do. (NewIssue)			( 123	\$15	\$12	\$20,000	\$1,502	27 72 04	Final of 60 cents making \$1.80 for 04	30-3-05	12 %	\$15
Hongkong Hotel Co., Ld.	-000	\$360,000	24,000	\$15	\$71/2	)		and the same of the same	None Preferential of 7% for '04			46.
THE PARTY AND THE MILE AND THE PARTY AND THE			12,000	\$50	\$50	\$648,975	\$10,126	30-6-05	\$5 for first half-year 1905			
Agency Co., Ld	1889	ALM A	50,000	\$100	\$100	e \$250,000	\$37,875	31-12-04	Interim \$3 1/2 for 1905			\$147 buyers
Hotel des Colonies Co., Ld. (Shanghai)	1902	T225,000	9,000	T25						1	5 1/2 %	\$128 sellers
Hotel Metropole Company, Limited	1904	\$200,000	2,000	\$100	#100	1 20,986	17,202	31-3-05	T21/2 for the year ending 31-3-05	IS-5-05	14 %	T <sub>18</sub> sales
Humphreys' Estate & Finance Co., Ld.	T887	\$1 500 000		\$100	\$100		First	year	Interim of \$4	26-1-05		\$105 sellers
Kowloon Land and Building Co., Ld	1880			\$10	\$10	\$200,994 \$50,000	\$11,958	31-12-04	90 cents for '04	TT-0-0"		
Shanghai Land Investment Co., Ld	1009	* 0	6,000	\$50	\$30	none	\$377	31-12-04	\$3 for '04			\$121/2 buyers
Tientsin Hotel des Colonies, Ld	1901		52,000	T50	T50	e T170,000	T40,066	31-12-04	Y A T P PN P A		15/15/15/15	\$40 buyers
Tientsin Land Investment Co., Ld	1903		1,400	T50	T50	none	T670	31-12-04	Interim of T3 for 'o5			T122 sellers
Wei-hai-wei Land and Building Co., Ld.	1902		7,726	T100	T100	i T67,300	T725	31-12-04				1.4.7400
West Point Building Co., Ld.	1899	2 , 0	3,764	T25	T25	none			None		6 %	Tii71/2 buyers
	1889	\$625,000	12,500	\$50	\$50	none	\$1.247	21-12-04	Interim of dra/ for ton	Pro-		T12
Cotton Mills.								31-12-04	Interim of \$134 for '05	27-7-05	634%	\$55
Ewo Cotton Spinning and Weaving ) Co., Ld.	1895	T750,000	15,000	T50	day.							
Hongkong Cotton Spinning, Weaving			4.3,000	150	T50	none	T12,844	31-10-04	T4 for year ended 31-10-03	22-12-03	8 %	Tagli sales
and Dyeing Co., Ld	1901	\$1,250,000	125,000	\$10	\$x0						7.0	- J=/2 Saics
International Cotton Manufacturing )					\$10	\$30,000	***************************************	31-7-05	\$1 for year ended 31-7-05	4-9-05	7 %	\$141/2 sellers
Co., Ld	1895	T750,000 (	5) 10,000	T75	T75	n T31,669	Tra 620	20-0-04	Interim of a 04 a /a + 0 = 0			
Laou-kung-mow Cotton Spinning & 1	1801	7000 000	C) 0		(	131,669	23,029	30-9-04	Interim of 3 % a/c 1898	30-4-98	-	T44 buyers
	1895	T800,000 (		Tioo	T100	none	T10,000	31-12-04 I	nterim of 4 % a/c 1898 on 6,000 shares	T 9 09		·r· - 1
Soey Chee Cotton Spinning Co., Ld	1895	T1,000,000	2,000	T500	T500	/ T= 6=8	Taaner	27.72.01	. 0 / 6 0	1-0-90		159 buyers
Miscellaneous.						23,030		31-12-04	4 º/o for 1897	2-2-98	- 1	T260 buyers
Anglo German Brewing Co., Ltd	1905	\$100,000	4,000	\$100	\$100							
Bell's Asbestos Eastern Agency, Ld	1895	£5,377.10s	8,604	12/6	12/6			-	First year	Managament .	- 4	\$105
Campbell, Moore & Co., Ld	1886	\$12,000	1,200	\$10	\$10	2314	£770	31-12-04	1/3 per share for '04	21-7-05	914% \$	57 buyers
China-Borneo Co., Ld	1903	\$720,000 (	2.5	\$12					\$3 for 1904	1-4-05		
China Flour Mill Co., Ld.	_	T200,000	4,000	T50	\$12	none	parameter .	31-12-04	\$1 for 1904	17-3-05	81/97 4	trr3/
China Light and Power Co., Ld.		\$500,000	50,000		T50	T30,000	T718	31-12-04	Interim of T5 for 1905	24-7-05	81/2%	177 1/2 sellers
China Provident Loan and Mortgage)			50,000	\$10	\$10	none	***************************************	29-2-04	None			510
CO., Late mention of the contract of the contr		\$1,000,000	100,000	\$10	\$10	\$80,000						
Dairy Farm Company, Ld	1896	\$187,500	25,000	\$71/	46				30 cents for 1904			
				41/2	200			31-7-04 \$	11/4 for year ending 31-7-03	20-TI-02		tr=1/

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STOCKS	WHEN ESTAB-	CAPITAL	NO. OF SHARES	VALUE	PAID UP		RESERVE		ORKING	DATE	LAST DIVIDEND	WHEN	Approximate Return at Present Quotation*	QUOTATIONS		
Miscellaneous, -Continued													PER CENT			
Green Island Cement Co., Ld	. 1889	\$1,500,000	150,000	\$10	\$10	1	\$400,000		\$95,054	31-12-04	\$2 for 1904	27-2-05	7 %	\$28		
Hall & Holtz, Ld		\$420,000	(8) 21,000	\$20	\$20	P	\$186,000		\$7,551	29-2-05	Final of \$1 1/2 making \$2 1/2	15-4-05	91/4%	\$27		
Hongkong and China Gas Co., Ld	. 1864	£70,000	7,000	£10	210	13 1	£25,394 £3,000	{	₹8,188	31-12-04	f Final of 6% & bonus of 1% mak- 1 ing 22s. for 1904	25-5-05	7 %	\$175 buyers		
Hongkong Electric Co., Ld	1889	\$600,000	30,000	\$10 \$10	\$10 \$5	1	none		\$2,151	30-4-05	\$1.00 for year ending 30-4-05			\$15¼ buyers \$9¼ buyers		
Hongkong High-Level Tramways	1887	\$125,000	1,250	\$100	\$100		\$50,000		\$2,796	30-11-04	\$15 for year ending 30-11-04					
Hongkong Ice Company, Ld	1881	\$125,000	5,000	\$25	\$25	k	\$60,000		.\$5,356	31-12-04	Interim of \$4 for 1905	2-8-05	7 %	\$237 1/2 sellers		
H'kong Rope Manufacturing Co., Ld	1883	\$500,000	10,000	\$50	\$50						\$10 for 1904			\$152 buyers		
Hongkong Steam Waterboat Co., Ld	1900	\$150,000	15,000	\$10	\$10		\$2,500	1		30-9-04	Interim of 50 cents for half year			\$14 sellers		
Lane, Crawford & Co., Ld. (Shanghai).	1903	\$250,000	2,500	\$100	\$100		none		\$42,009	29-2-05	Final of \$9 making \$14 for 1904		91/2%			
Maatschappij tot Mijn-, Bosch- en ) Landbouwexploitatie in Langkat (	1902	G.2,500,000;	25,000	G.100	G.100	1	T528,210		Г35,849	31-10-04	1/ 1 1 1 1 1 1 1 1 1 1 1 1 1	15-9-05		T240 buyers		
Mondon, (E. L.) Ld	1	T350,000	7,000	T50	T50		none	Dr. T	117,638	31-12-04	T5 for 1902	2-5-03	_	T25		
Philippine Company, Ld	1904	\$675,000	67,500	\$10	\$10				_		First year			\$8 nominal		
Shanghai and Hongkong Dyeing and (Cleaning Co., Ld.	1903	\$60,000	1,200	\$50	\$50		none	1.5	\$5,537	31-8-04	None			\$50		
Shanghai Gas Co., Ld	1903	T800,000	16,000	T50	T50	3 d	T145,000 }	}	T8,011	31-12-04	Interim of T31/2 for 1905	26-7-05	7 %	T1231/2 sales		
Shanghai Horse Bazaar Co., Ld			5,400	T50	T50						T6 for 1904			T8o sellers		
Shanghai Pulp and Paper Co., Ld	1	T450,000	4,500	Tioo	T100						Interim of T6 for 1905			T150 sellers		
Shanghai Sumatra Tobacco Co., Ld		T600,000	9) 30,000	T20	T20	\$ 701	T24,820   T25,000				Final of T6 making T9		131/2%			
Shanghai Waterworks Co., Ld	1881	£144,000	7,200	£20	€20	(w	T170,000				Interim of 15/- for 1905,		70.7	T44c buyers		
South China Morning Post, Ld	The same of the sa	\$150,000	6,000	\$25	\$25		none				None			\$20		
Steam Laundry Co., Ld	1	\$75,000	15,000	\$5	\$5		none				60 cents for year ended 31-5-04		71/2%	\$8		
Straits Ice Company, Ld	A CONTRACT OF	\$200,000	2,000	\$100	\$100		\$25,000				\$5 account 1905	2-05		\$150		
Tientsin Waterworks Co., Ld	4 D_ DU A	T. T200,000	2,000	T. T100	T. Troo	3	T15,259				Final of T41/2 making T81/2 for '04/5.	17-6-05	7 %	T. T120		
United Asbestos Oriental Agency, Ld. ) Do. do (Founders') }	1896	\$100,000	9,900	\$10	\$4 1	10	\$22,000				{ \$0 cents } for year ended 31-5-05		19 %	\$9 buyers		
Watson (A. S.) & Co, Ld	1886	\$900,000	90,000	\$10	\$10	1	\$300,000				Final of 50 cents making \$1 for '04.					
William Powell, Ld	1901	\$150,000	15,000	\$10	\$10	е	\$4.500		\$676	30-6-05	frinal of 70 cents making \$1.20 } for year	2-10-05	101/2%	\$11½ ex div.		
LOANS AND DE	LOANS AND DEBENTURES			AGENTS FOR THE LOAN		IOUNT OF	PAR	STANDG		WHEN PAVABLE			CLOSING QUOTATIONS			
China Government, 7 per cent. Silver Loan 1886 E  Hongkong Hotel Co., Ltd., 6% Mortgage Debentures of 1899‡  Shanghai & Hongkew Wharf Company, Ltd. 6% Debentures of 1902  Astor House Hotel Co., Ltd. 8% Debentures of 1903  Chinese Engineering & Mining Co., Ltd., 6% Debentures of 1903†  International Cotton Manufacturing Co., Ltd. 6% Debentures of 1901					ongkong Shanghai kg. Cor.		T767,200 \$500,000 T543,900 T500,000 \$500,000	Tico	₹480,00	Half y Half y Half y DO Half y	lar. 31st & Sept. 30th each year until Mar. 31st, 16 alf yearly, June 30th and December 31st			To5 Plus accrued interest par.		

a Authorized capital \$2,000,000
b Building Reserve Account.
c Capital Reserve Fund.
d Depreciation Fund.
e Equalization of Dividend Fund.
f Exchange and Investment Fluctuation Account.
g Gold Reserve Fund

h Exchange Reserve Account.
i Insurance Fund.

Reinsurance Fund.

k Contingencies Account

<sup>¿</sup> Legal Reserve Fund.

n Sinking Fund.

p Premium on New Issue.

r Repairs and Renewals Account.
s Silver Reserve Fund.

<sup>&</sup>quot; Underwriting Suspense Account.

w Special works Fund.
x Extra Reserve Fund.

y 75,000 owned by the Company. z 6,000 shares unissued.

<sup>7 14,000</sup> shares unissued

<sup>8 399</sup> shares unissued.
9 Only 13,000 shares issued.
\* Based on last year's dividend.

<sup>2 5,725</sup> shares unissued.

2 First issue of 60,000 of which 10,411 unallotted.

3 785 shares unissued.

4 7,600 shares unissued.

5 1,616 shares unallotted.

5 1,616 shares unallotted.

6 842 shares unallotted.

7 268 held by the Company.

1 In certificates of £20 and £100

2 Redeemable in 10 years, or at option of Company the Company giving 6 months' notice.

7 Redeemable at par at rate of £10,000 per annum from 31st December, 1903, to 31st December, 1952 Dr. Deficit.

## SINGAPORE SHARE QUOTATIONS.

COURTESY MESSRS. FRASER & CO., BROKERS, SINGAPORE, NOVEMBER, 1905.

NAME	DATE OF FOR- MATION	CAPITAI.	PAID UP	OF SHARES		PAID	RESERVE	LAST DIVIDEND	SINCE LAST MAIL HIGHEST LOWEST		CLOSING QUOTATIONS
Mining.											
sawah Gold Mining Co., Ld	1000	\$175 000	**** ****	13,500 /	10	10			<b>*</b>	\$	\$
Deferred.	1900	\$175,000	115,000	4,000	10	IO	**********	*********************	*******	F + + + + 4 + x +	14.00 sellers
seh Hydraulic Tin Mining Co., Ld	1901	\$600,000	600,000	60,000	10		*******	*************************************	65	*******	8.00 sellers
lana Gold Mining Co., Ld	1001	\$200,000	200,000	20,000	10		*******	********************	100	7.50	8.00 buyers
Pret.	1901	\$300,000	300,000	10,000	10			**********************		*******	2.00 sellers
hau Goldfields, Ld. Fully paid	TOOO	(20,000	+6 +== =( )	6,207	1	1	***********		361219300	*******	10 oo nominal
" Contrib	1902	2,30,000	10,175.7/-7	23,793 2	7	10/-	**********	* ****** * * * * * * * * * * * * * * * *		*******	3 oo sellers
ing Corporation Ld	1889	€ 250,000	244,306	244,306	T	19/	20,000	2 ther post for warm and in a f	******		2.00 sellers
ing Kabang Ld	.000		(	360,000	Y	1	20,000	3 per cent for year ending 30 6-02		3.00	3.00 sellers
176/	1890	₹375,000	375,000	15,000	T	T	********	*********************		* * * * * * * * *	0.75 sellers
ensland Raub G. M. Co., Ld. Fully paid		0-10		36,700		7	********			*******	nom.
" Contrib.	1901	£ 146,700	100,866	110,000	1	TT/8	*********		********	*******	пош.
Aust. Gold Ming. Co., Ld. Fully paid	-0-			The same and the s	A Y	11/8	4 8 0 0	**************************************	*******	*******	0.30 sellers
Contrib	1092	€ 200,000	191,250	50,000		+0/10	4,873	Is. paid January, 'or	*****	********	4.00 nom.
ang Lebong Mining Co.	1898	f.2,000,000	1,800,000	150,000		18/10		IS. " " " " " " " " " " " " " " " " " " "		********	3.75 sellers
d Johore Tin Mining Co., Ld	1900	\$220,000	220,000	20,000 3	100	100	* * * * * * * * * * *	22 9-10% for year ending 31-12-04	385.00	375.00	385.00 buyers
u l'in Co., Ld	1800			22,000	10	7.00	*******	5 " for year ending 15-2-04			3.25 sellers
Belat Tin Mining Co., Ld	1000	\$230,000	230,000	23,000	10		*********	5 " for 1/2 year ending 30 6-05		*******	4.75 buyers
oh Mines, Ld	1903	\$300,000	300,000	30,000	10	IO	*********	***********************************	6.00	5.00	5.00 sales
Development Co., Ld	1902	£ 160,000	149,185	160,000 5	I	- I	********	5/6 paid during 1905		3.00	
	1903	₹400,000	350,000	400,000 6	I	1	**********	***************************************			8 50 sellers
Rubber.										ATTATATA	8.50 sellers
t Rajah Rubber Co	1903	\$70,000	61,000	70,000 13	*						
wnie Rubber Estate Ld	1005	\$200,000	100,000	20,000	1.0	* * * * * * * * *	********				£3.10s. od
y Rubber Estates Co			100,000		10	5	9 F F F R R R R R R R R		*******	*******	\$7.00 sales
570 Pref	1904	₹ 12,000	10,500	6,000	1		*******		********	*******	£2.28.6d
ng Rubber Estate Syndicate	1903	£30,000	17 500	6,000 14	1					*******	£1.15s. od
Planting Co. Ld	1904	\$200,000	17,500	30,000 15	1	1					£4.10s. od
croft Rubber Co	1904	The second secon	135,000	2,000 16	100	100					\$200.00 buyers
gor Rubber Co. Ld	1898	\$100,000	85,000	1,000 17	100	100		*****************	200.00	180.00	200.00 sellers
Rubber Company, Ld	1090	£30.000	26,000	30,000 18	I	I					£7.10s. od
pore & Johore Rubber Co. Ld	1904	\$100,000	88,000	1,000 20	IO	10	*********			*******	\$12.00
" Contrib.	1903	\$100,000	78,750	150	100	100	********				-10
ei Way Rubber Co. Fully paid				850	100	75	********			DECEDERATE	\$100.00
		£50,000	13,920	6,920	1	1		********************			75.00
mbrosa Rubber Co				35,000 19	I	4/-	********			*******	£2.0s. od. sellers
THE TOTAL CONTRACT CONTRACTOR OF THE PROPERTY	1904	1,00,000	50,000	63,000	I	********		************************************		******	£ 1.0s. od.
General.									********		£4.5s. od
r & Neave, Ld	1898	\$225,000	225,000	4 500	P.O.	50	*** ***				
n & Co., Ld	1904	\$480,200	334,800	4,500	50	50	112,500	10 p. ct. and 2 1/2 per cent bonus for '04	105.00	103.00	105.00 buyers
			334,000	3,348	100	100	5,000	7 per cent March 1905	*******	******	50.00 buyers
ng and Shanghai Banking Corporation	1865	\$10,000,000	10 000 000	80.000	***		10,000,000 9				
	1003	40,000,000	10,000,000	80,000	125	125	8,500,000	35s. for 1/2 year ending 30-6.05	*******		850.00
rth Erskine, Ld	1901	\$1 200 000	T 200 000			- (	250,000 10				
ard & Co., Ld	1901	\$1,200,000	1,200,000	12,000	100	100	275,000	10% and 5% bon. for yr. end. 30-6-05.	265.00	250.00	265.00 buyers
, Hargreaves & Co., Ld	1901	\$34,000	34,000	3,400	10	10		20 per cent for year ending 31-10-04	*********		23.00 sellers
" " 70/0 Pref 5	1899	\$875,000	875,000	6,000	100	100	150,000	10 p. ct. and 21/2 p. ct. bon. for year '04	200.00	195 00	200.00 buyers
pore Cold Storage Co., Ld				2,750	100	100	********	7 p. ct. for year 1904			
pore Dispensary Ld	1903	\$600,000	240,000	24,000 4	10	10	********	***********************		*******	115.00 buyers
s Ice Co T.d	1891	\$30,000	30,000	600	50	50	19,000	121/2 per cent for year ending 31-7-04	*******	*******	8.50 buyers
s Ice Co., Ld	1884	\$200,000	200,000	2,000	100	100	22,000	5 "interim for 1905		******	77.50 buyers
s Steam Ship Co., Ld	1890	\$500,000	421,500	E 000 E		(	400,000		The second secon		150.00 buyers
		\$300,000	421,300	5,000 7	100	100	169,228 11	{ 5 p. ct. interim for 1905	*******		150.00 buyers
s Trading Co., Ld	1887	\$3,000,000	2 500 000	200 000 0			700,000				
		43,000,000	2,500,000	300,000 8	10	10	1,021,395 12	{ 10 p.ct. & 50cts. bon. 1/2 yr. end. 31-3-05	*******		42.50 sales
ng Pagar Dock Co., Ld	1864	\$3,700,000	3,700,000	37,000	100	100	1,950,000				
Debentures. \$							12001000	\$20 for half year ending 31-12-04	*******		500.00 sellers
등입니다 되어서 되었다면 보다 보고 있는데 이번 사람들이 되었다. 그리고 있는데 그리고 있는데 그리고 있는데 그리고 있다면 그리고 있다면 되었다.											
rth Erskine Ld. 7 per cent 250,000			*********								
pore Municipal 6 " 400,000		********					**********	****************	*******		3 per cent prem.
5 ''1,878,000			*********	********	*******	********		**** ******************	*******	*******	nominal
4 " 602,300		*******	*********	********	*******	*******		********************	*******	****** **	3 " prem. buyer
Hargreaves & Co., Ld. 6 p. cent 225,000		*********		*********	*******			**************	******		2 '. dis. nomina
ng Pagar Dock Co., Ld. 6 " 250,000		********		*********		*******	********			*******	3 " prem. buyer
5 " 1,365,500	********	*********		*********	******		*******	*********************			
3 1,305,500	*******	********		*********	*******	********	********	********************		********	prem sales
							5 3 3 3 1 1 5		*******	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	prem. sales

<sup>2 13,300</sup> 3 2,000 4 36,000

<sup>9</sup> Special Gold Reserve Fund.
10 Insurance Fund.
11 Sundry Reserves.
12 Sundry Reserves.

<sup>13 9,000</sup> unissued.

<sup>14 1,500</sup> 

<sup>15 12,500</sup> 16 650

<sup>17 150</sup> unissued. 18 4,000

<sup>19 8,080</sup> 20 1,200

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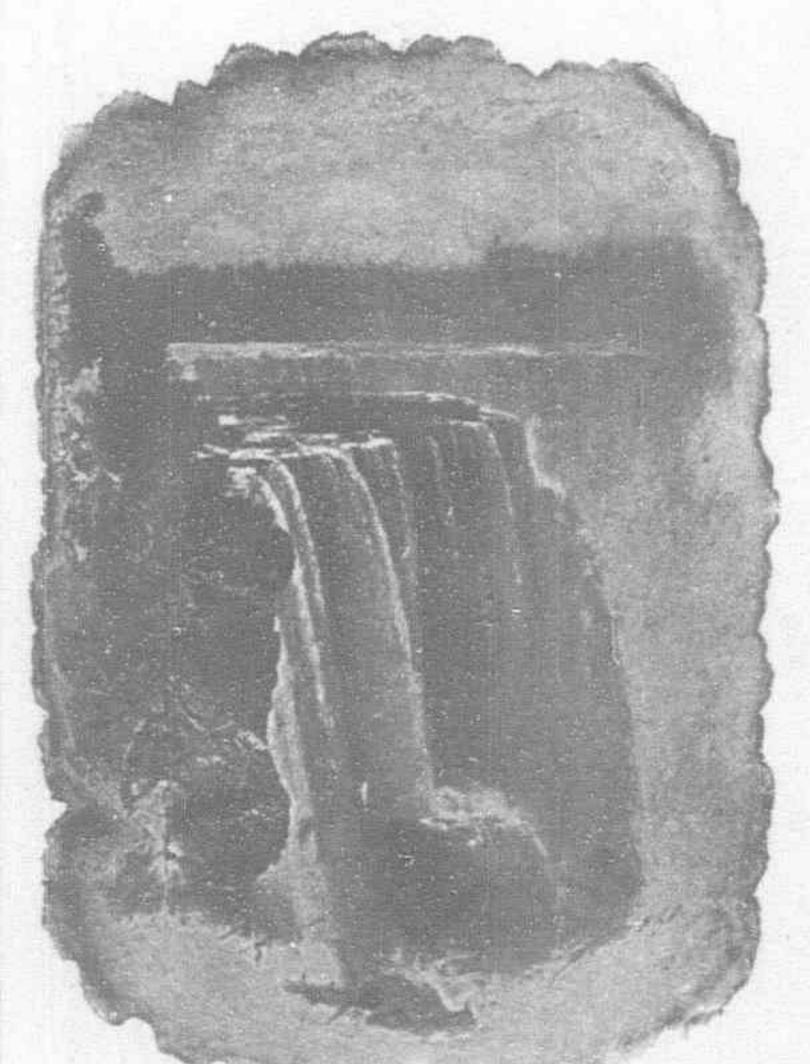
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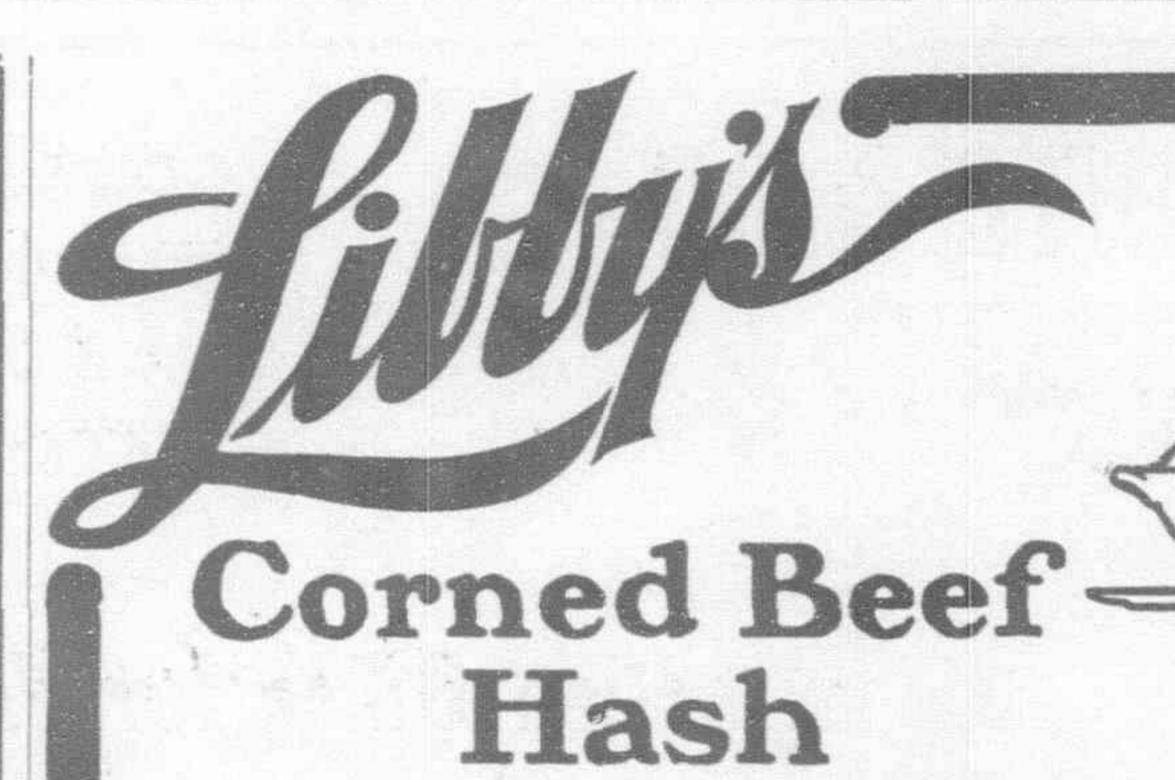
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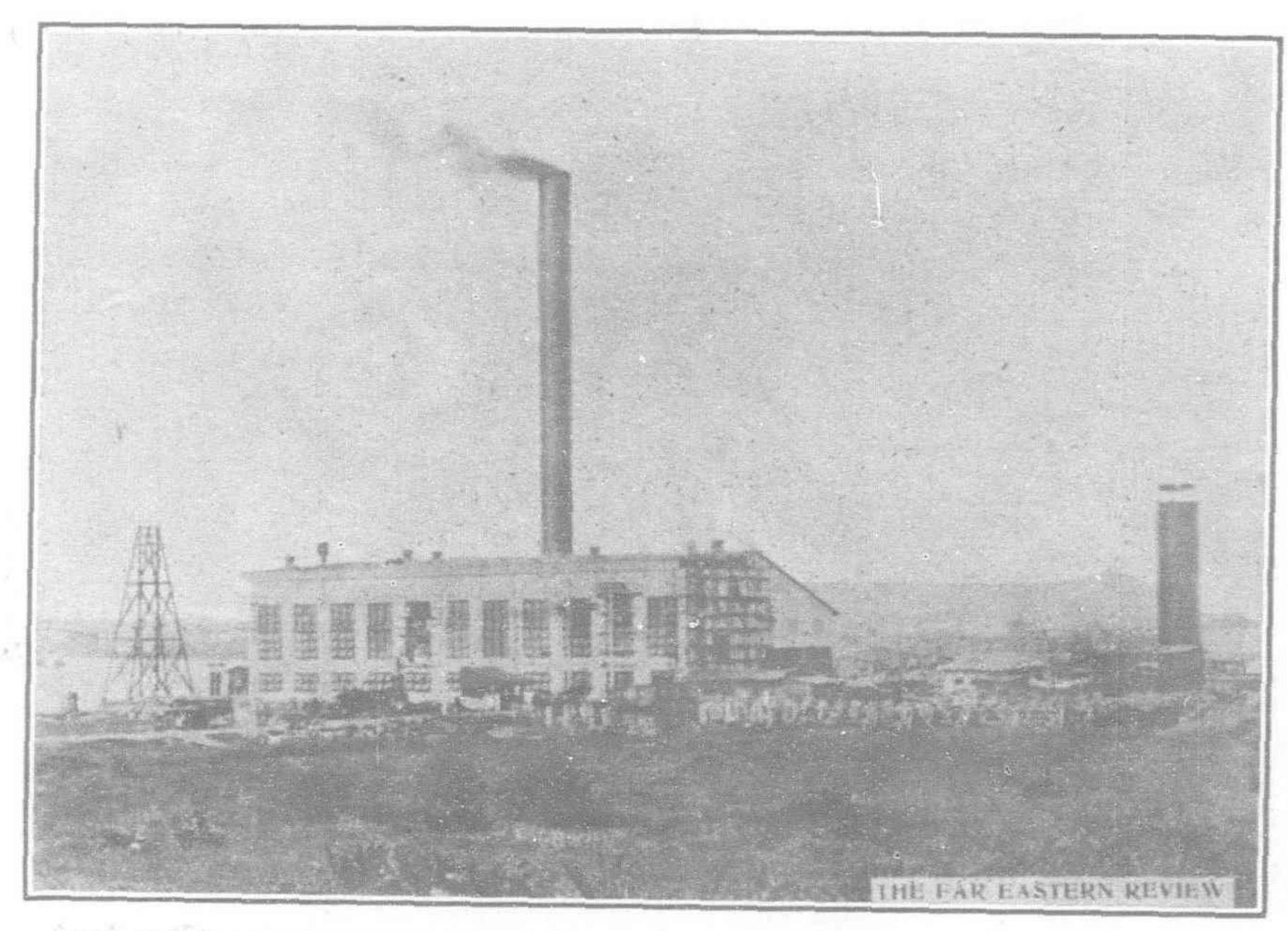
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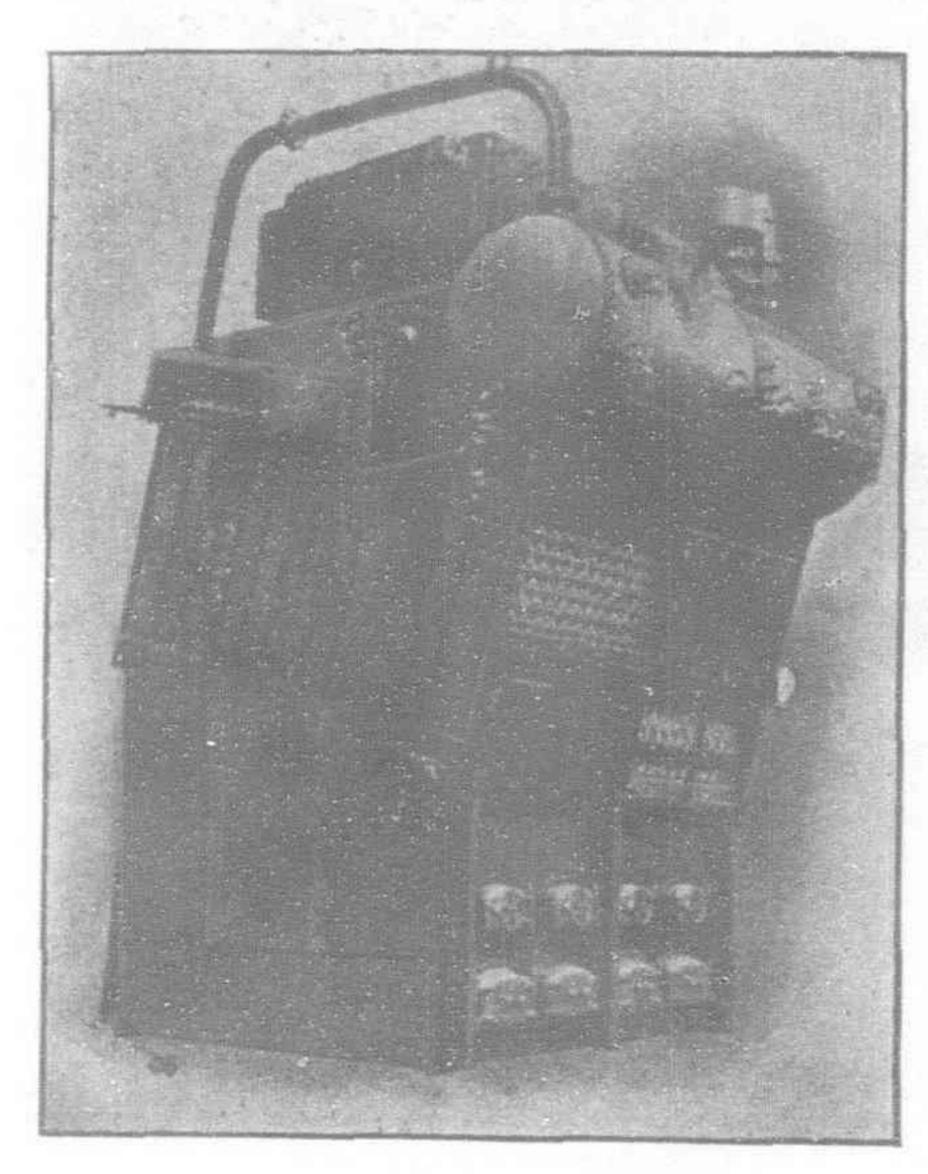
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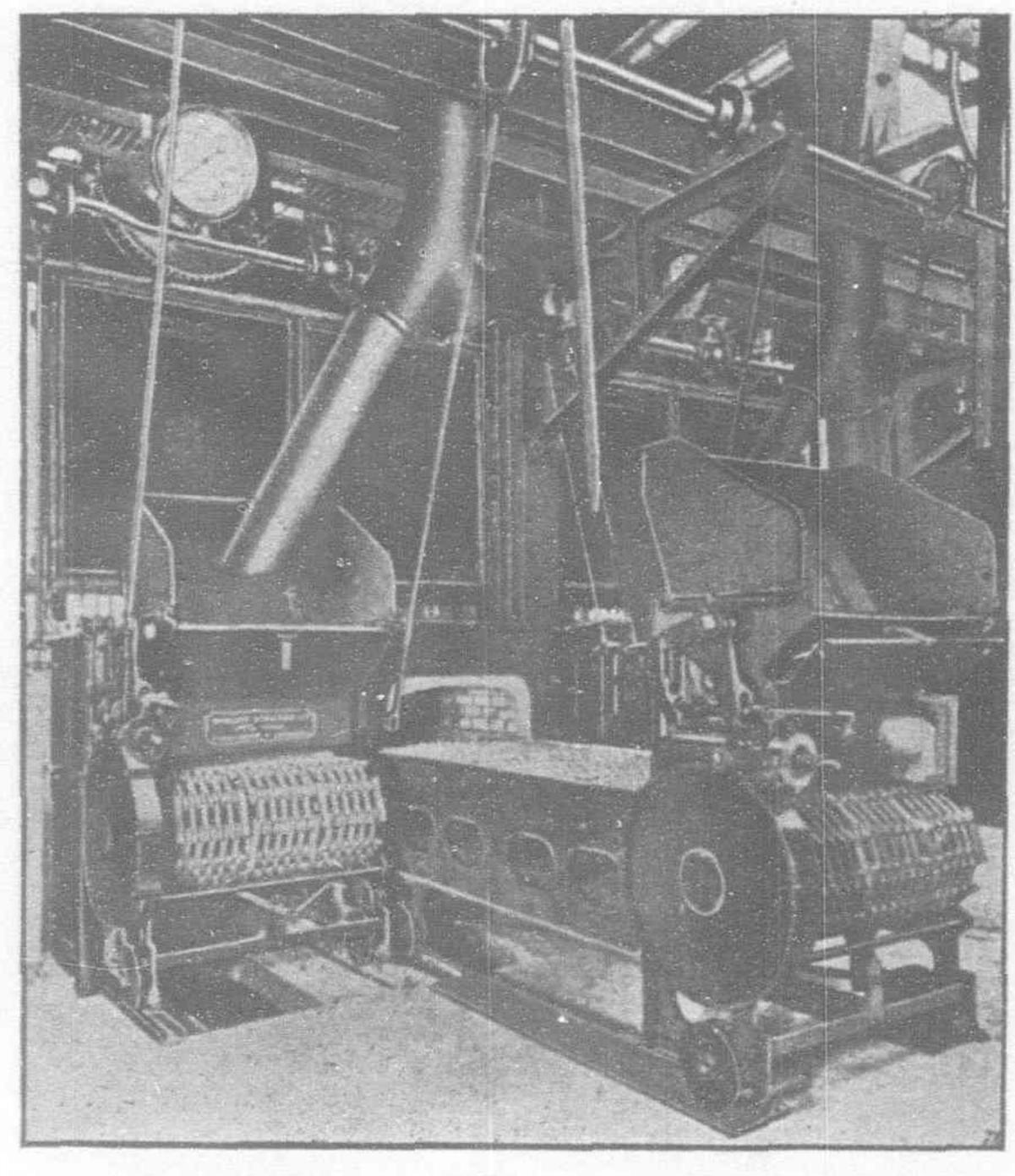
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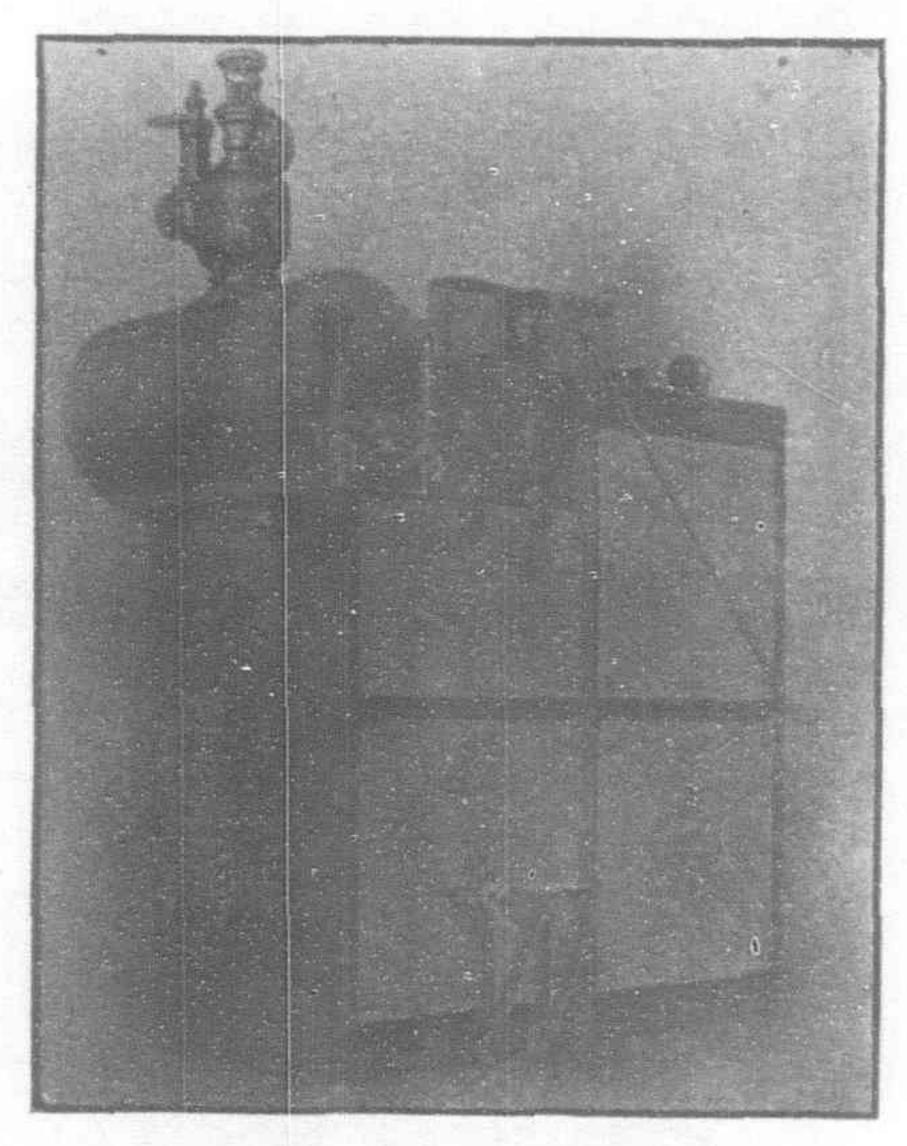
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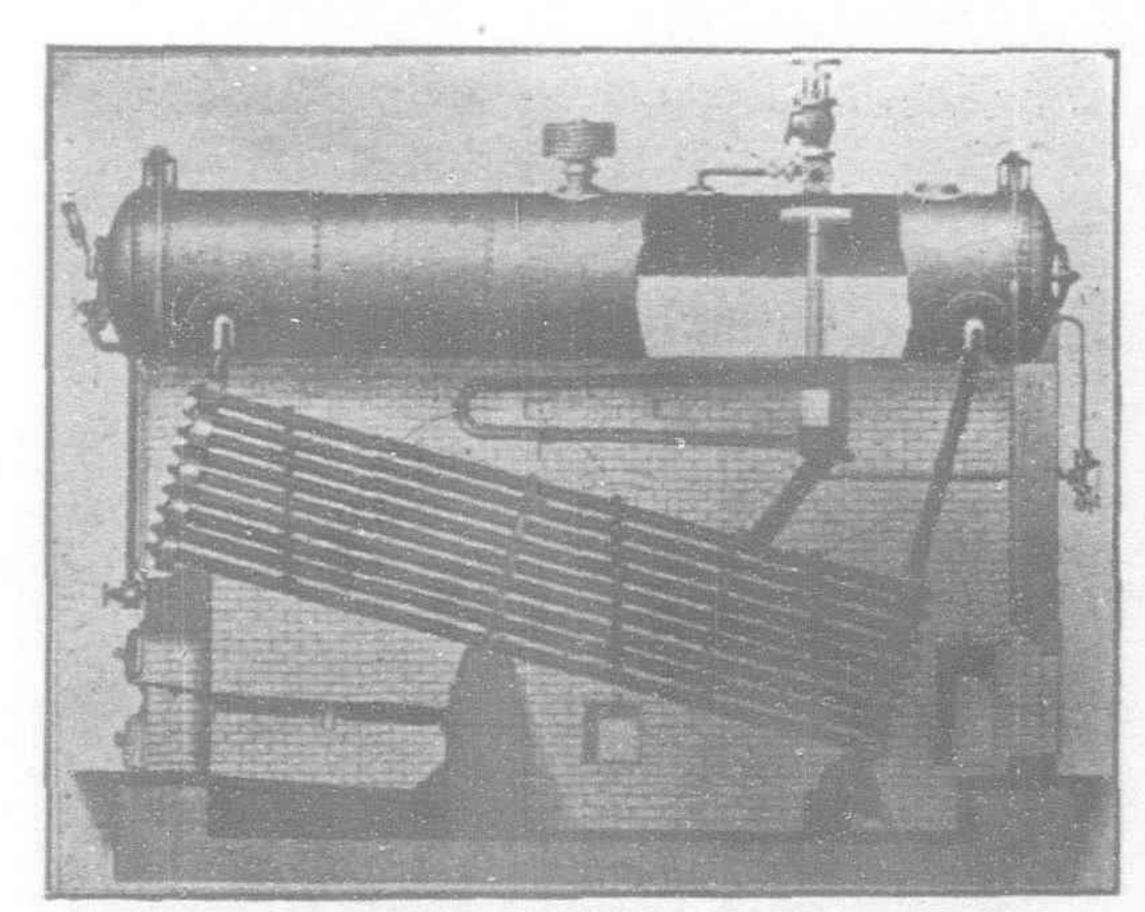
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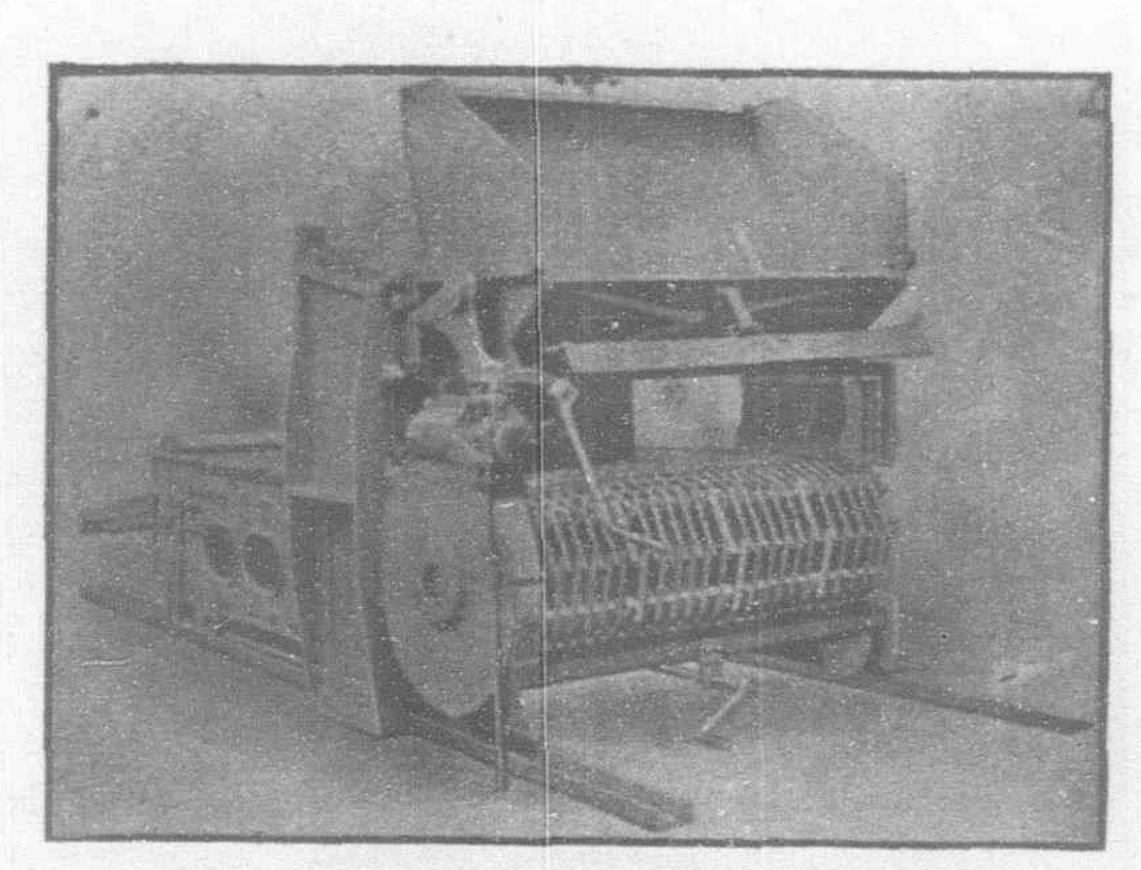
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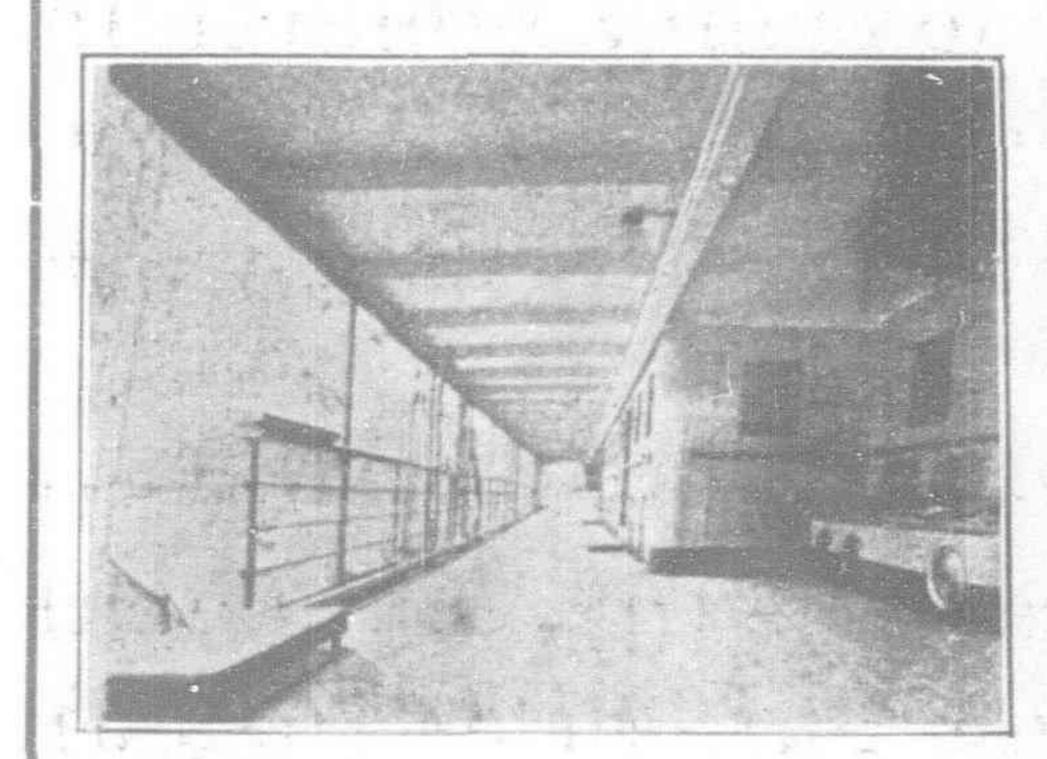
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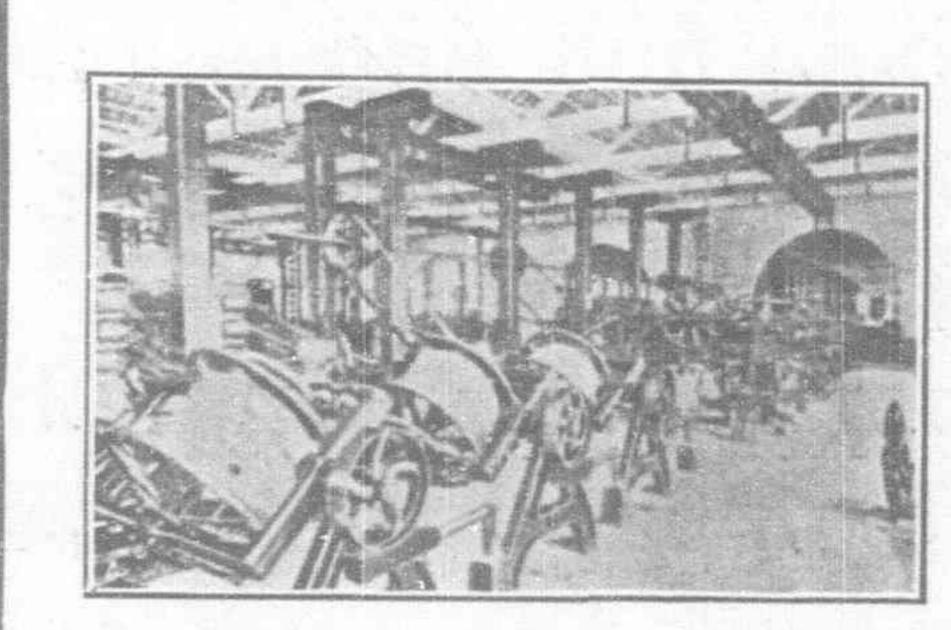
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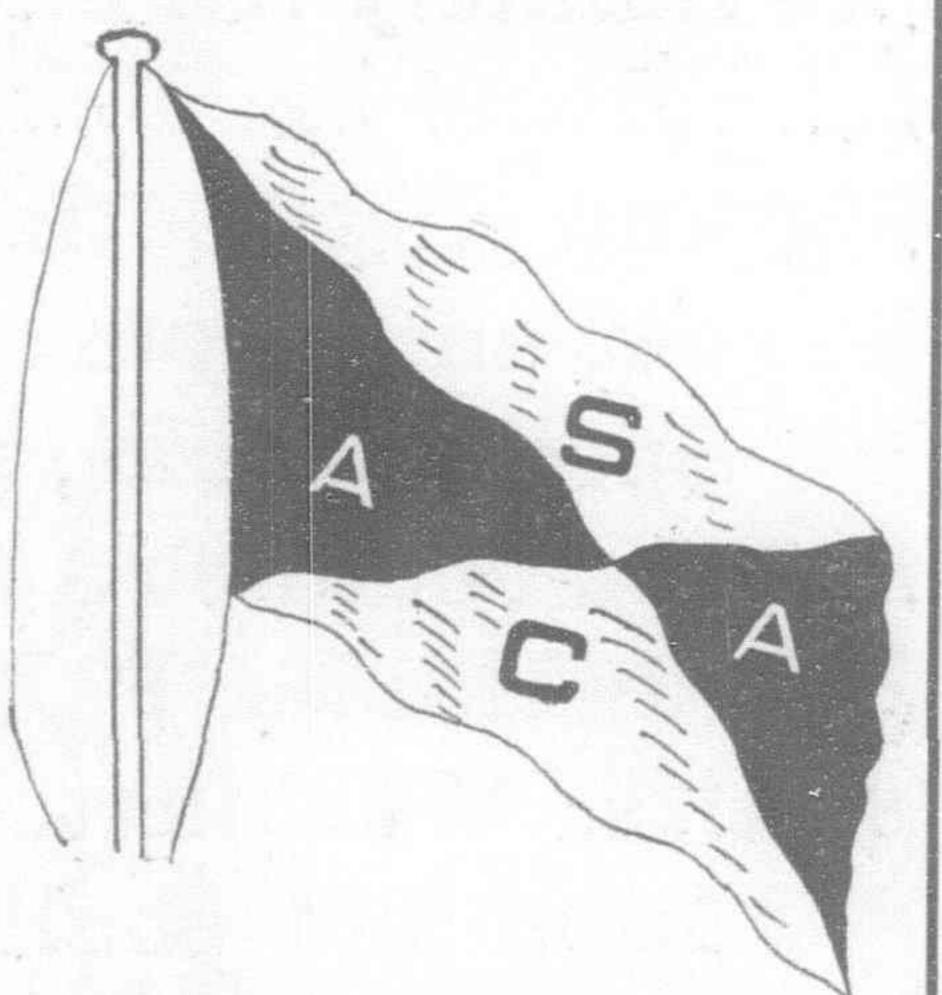
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Sealed BIDS or PROPOSALS will be received by the Secretary of the Municipal Board until 12 o'clock m. January 2, 1906, and thereupon opened, for the furnishing of materials for and the construction of a gravity water supply for the city of Manila, Philippine Islands.

The proposed work will consist of a masonry dam and inlet chamber; a steel pipe line forty-two inches in diameter and approximately ten and one-half miles long; a masonry conduit in tunnel and open cut about four and one-half miles long; a receiving and distributing reservoir; and the necessary gates, gatehouses, and appurtenances.

Specifications, general plans, and blank forms of proposal may be obtained at the office of the Secretary of the Municipal Board, Manila, P. I., or from the Chief of the Bureau of Insular Affairs, Washington. D. C.

Each bid shall be accompanied by a certified check for twenty thousand dollars (\$20,000) as a guaranty that the bidder, if awarded the contract, will, after due notification, promptly enter into contract and furnish an acceptable bond in the sum of twenty (20) per cent of the sum total of contract price for the faithful performance of the work.

The right is reserved to reject any or all bids.

G. S. LANE,

Acting Secretary, Municipal Board.

J. F. CASE,

Chief Engineer, Department of Sewer and Waterworks Construction.

The state of the s

## ADVERTISEMENT

## OFFICE OF THE MUNICIPAL BOARD

Manila, August 1, 1905.

Sealed BIDS or PROPOSALS will be received until 12 m. January 12, 1906, for the construction of a system of sewers and appurtenances for the city of Manila, Philippine Islands.

The total length of sewers will be approximately 52 miles, of which 7.5 miles will be of brick and concrete sewer ranging in size from 4.75 feet in diameter to 2 by 3 feet egg-shaped and laid at depths from 12 to 20 feet below the surface; and 43 miles will be of pipe sewers, from 8-inches to 24-inches in diameter, laid at depths of from 5 to 18 feet.

In addition to this there will be one 42-inch cast-iron outfall pipe 6,500 feet in length laid below the bed of the harbor on a pile foundation; besides one double line of 24-inch flexible-joint cast-iron, 650 feet in length, crossing the Pasig River.

The above work will be let as one contract, and each proposal must be accompanied by a certified check for \$50,000, drawn on a local bank, or a bond drawn for a like amount signed by a fidelity insurance company authorized to give such bonds in the Islands, and no bid shall be considered unless such check or bond accompany it.

A surety-company bond for an amount equal to 20 per cent of the gross amount of the contract will be required of the successful bidder.

Specifications, general plans, and blank forms of proposals may be obtained at the office of the Board after August 1, 1905. Plans and specifications may be seen at the office of the Bureau of Insular Affairs, War Department, Washington, D. C.

The right is reserved to reject any or all bids.

G. S. LANE,

Acting Secretary, Municipal Board.

J. F. CASE,

Chief Engineer, Department of Sewer and Waterworks Construction.

# 6.6. McCallought 6.

# Printers Engravers MANUFACTURING Book Binders STATIONERS

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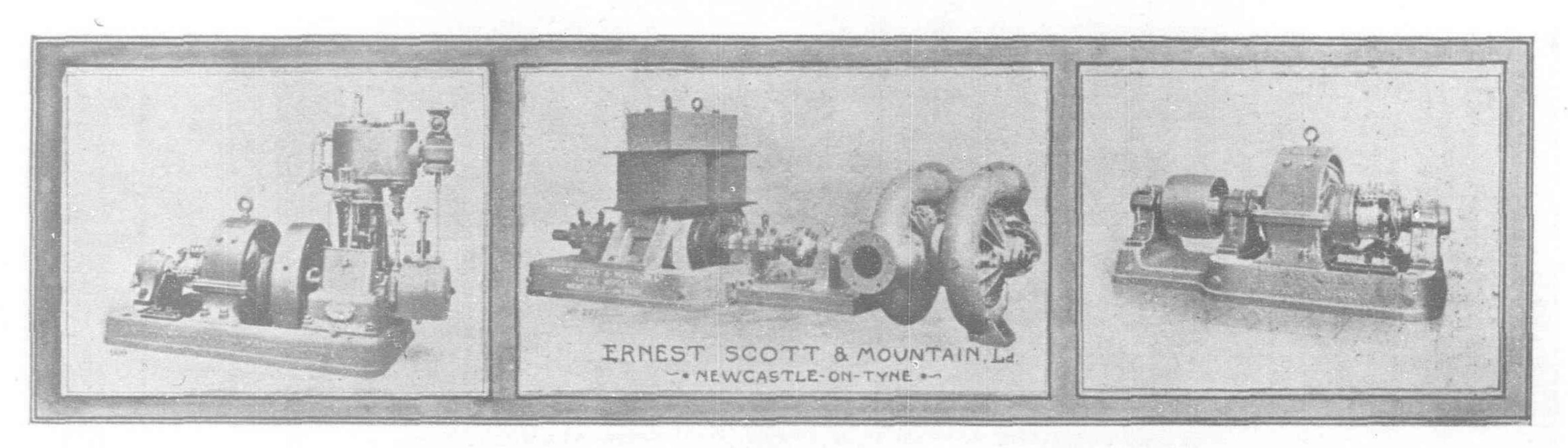
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ENGINES, BOILERS, PUMPS AND ELECTRICAL MACHINERY FOR ALL PURPOSES ENGINEERING AND ELECTRICAL SUPPLIES IN STOCK

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KARRI

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COMBINE GREAT STRENGTH
WITH DURABILITY AND ARE
IMPERVIOUS TO DESTRUCTIVE
INSECTS AND DAMP

ALL KINDS OF ENGINEERING
AND CONSTRUCTION WORK
CABINET, ART WORK AND
WOOD PAVING

LARGE STOCKS CARRIED
RAILWAY SLEEPERS, PILES
WHARF AND BRIDGE TIMBERS,
TELEGRAPH POLES, FLOORING,
PAVING BLOCKS, ETC.



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EWO TIMBER DEPOT SHANGHAI

KARRI, JARRAH
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REDWOOD
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SINGAPORE
HARDWOODS

OPERATING OWN
SAW MILL SUPPLYING
ANY SIZES AND
LENGTHS.

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CALCUTTA (ner & Co., T. Cook & Son, William Watson & Co., Grindlay & Co., Grindlay & Co.

Canton—Arnhold, Karberg & Co. Chefoo—Cornabe & Co. Chemulpo—Holme, Ringer & Co. Colombo—Delmege, Reid & Co. and Thos. Cook & Son.

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Southern route; passengers enjoy out-doors throughout; deck bathing. The call at Honolulu, Oahu, the most tertile and beautiful Island of the Pacific.

The only line to San Francisco, the greatest port of the Pacific.

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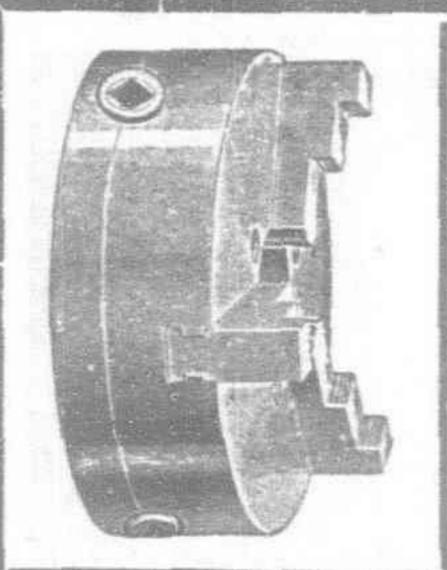
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DOORS, BLINDS, FRAMES, FLOORING AND ALL CLASSES OF INTERIOR JOINERY

CAPACITY OF MILL: 400 DOORS PER WEEK
CORRESPONDENCE RESPECTFULLY SOLICITED

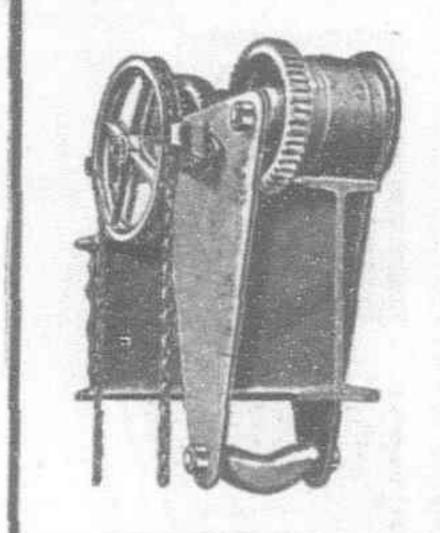


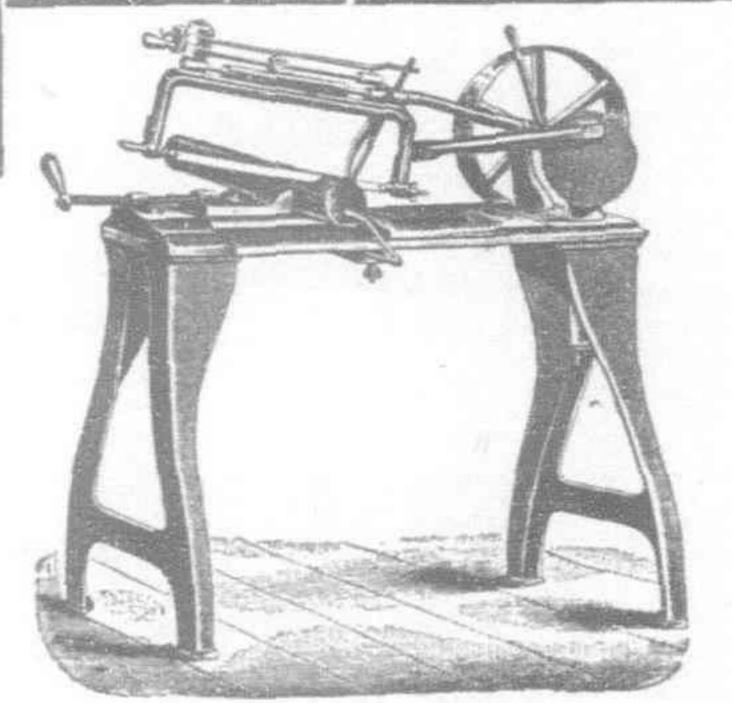
# THE SHANGHAI MACHINE GO., LTD.

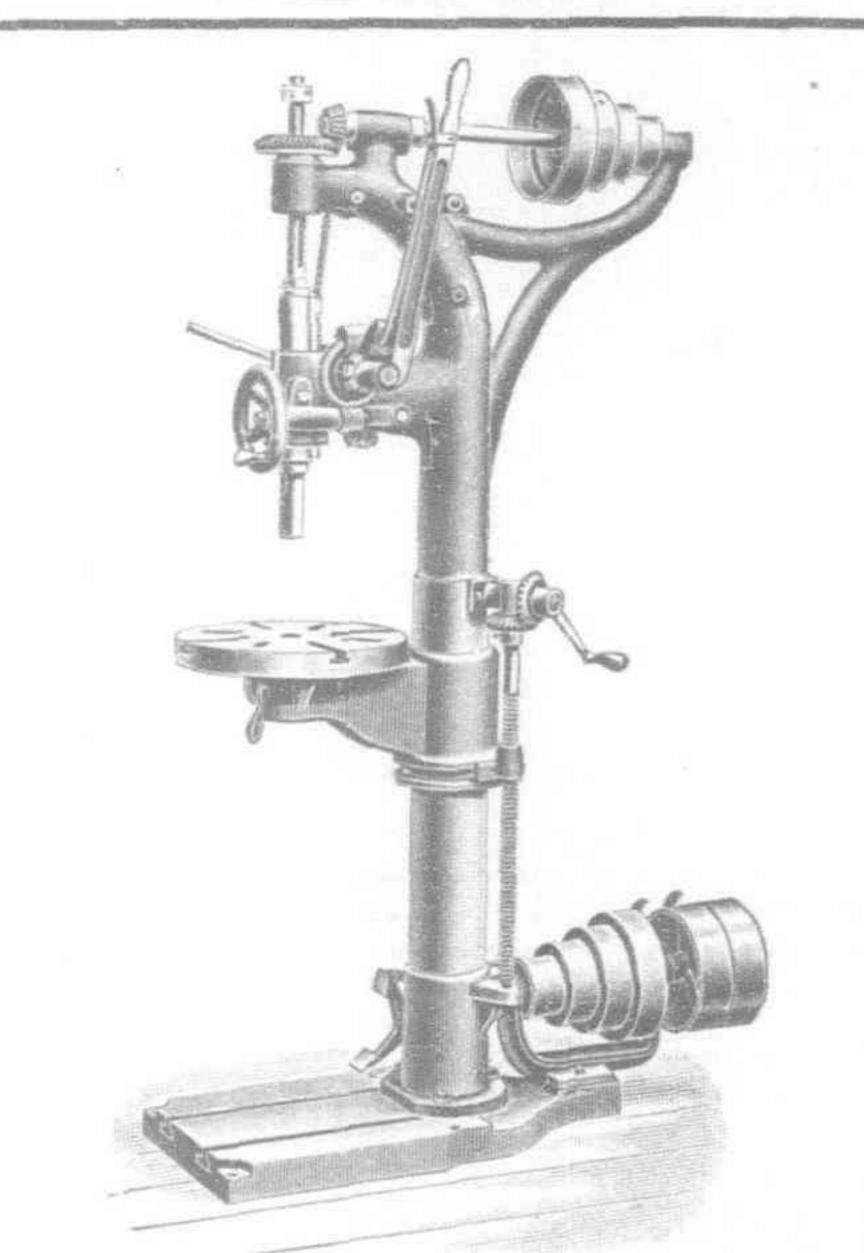
TELEPHONE, 831 HONG NAME "CHE-SHING"

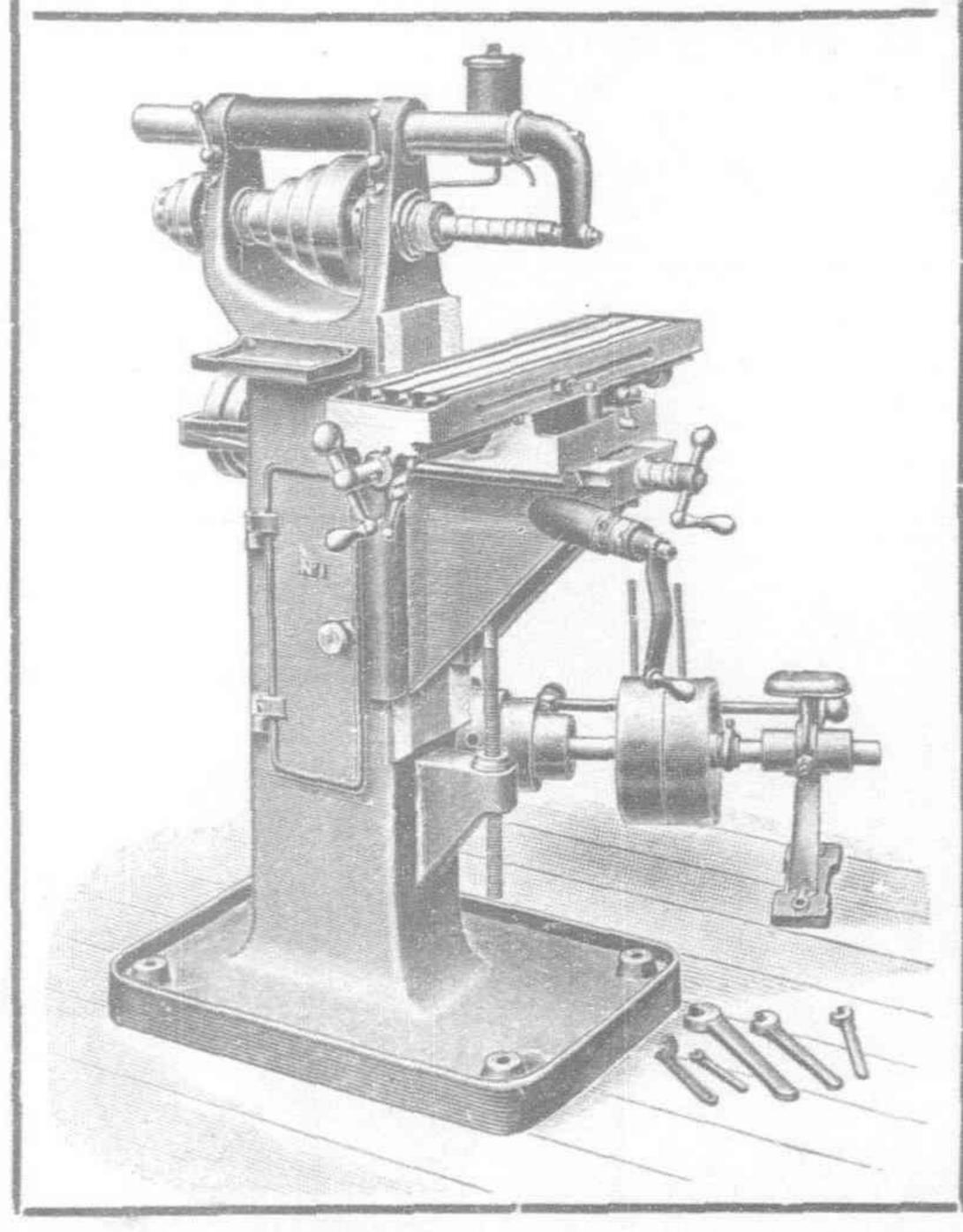
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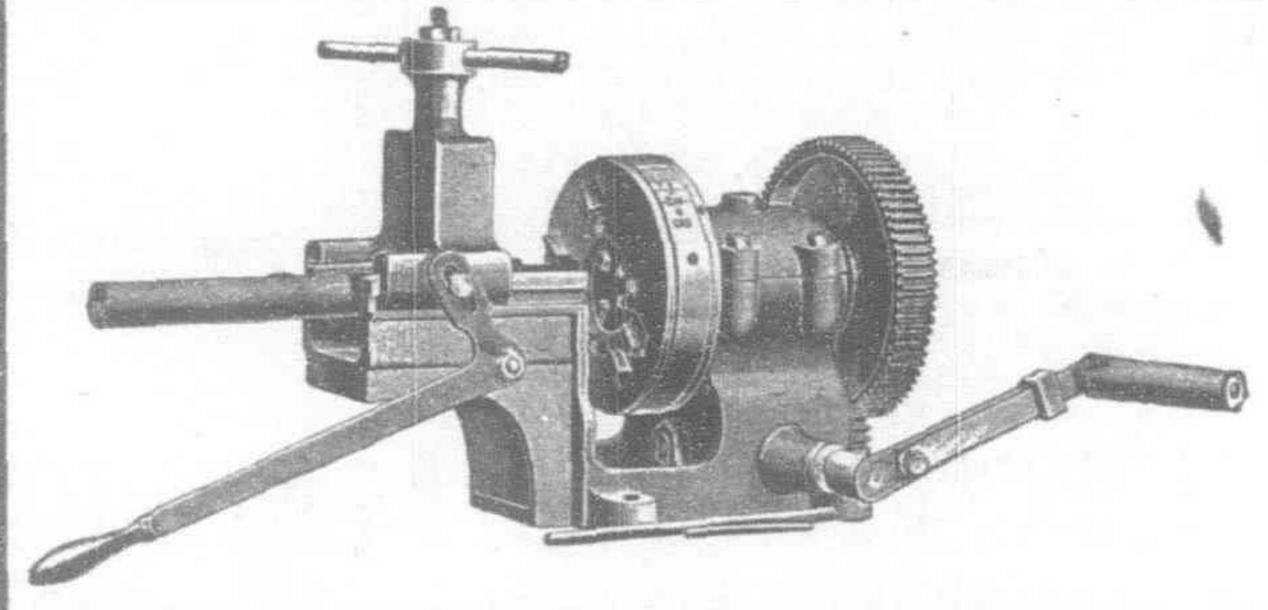
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Gap Lathes Turret Lathes Milling Machines Planing Shaping Slotting Radial Drilling Rapid Drilling General Drilling Punching Shearing Tinworking Metal Sawing Valve-Reseating Pipe and Bolt Threading Grinding Machines, etc.

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Morse Twist Drills Lathe and Drill Chucks Stocks, Dies, Taps and Other Cutting Tools Morton Emery Wheels Measuring Instruments General Engineer's Tools

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Worm Pulley Blocks Hydraulic Jacks Trolleys Hoisting Crabs Spare Chains and Gear BLOWERS FORGES VICES OF ALL KINDS STEAM PUMPS

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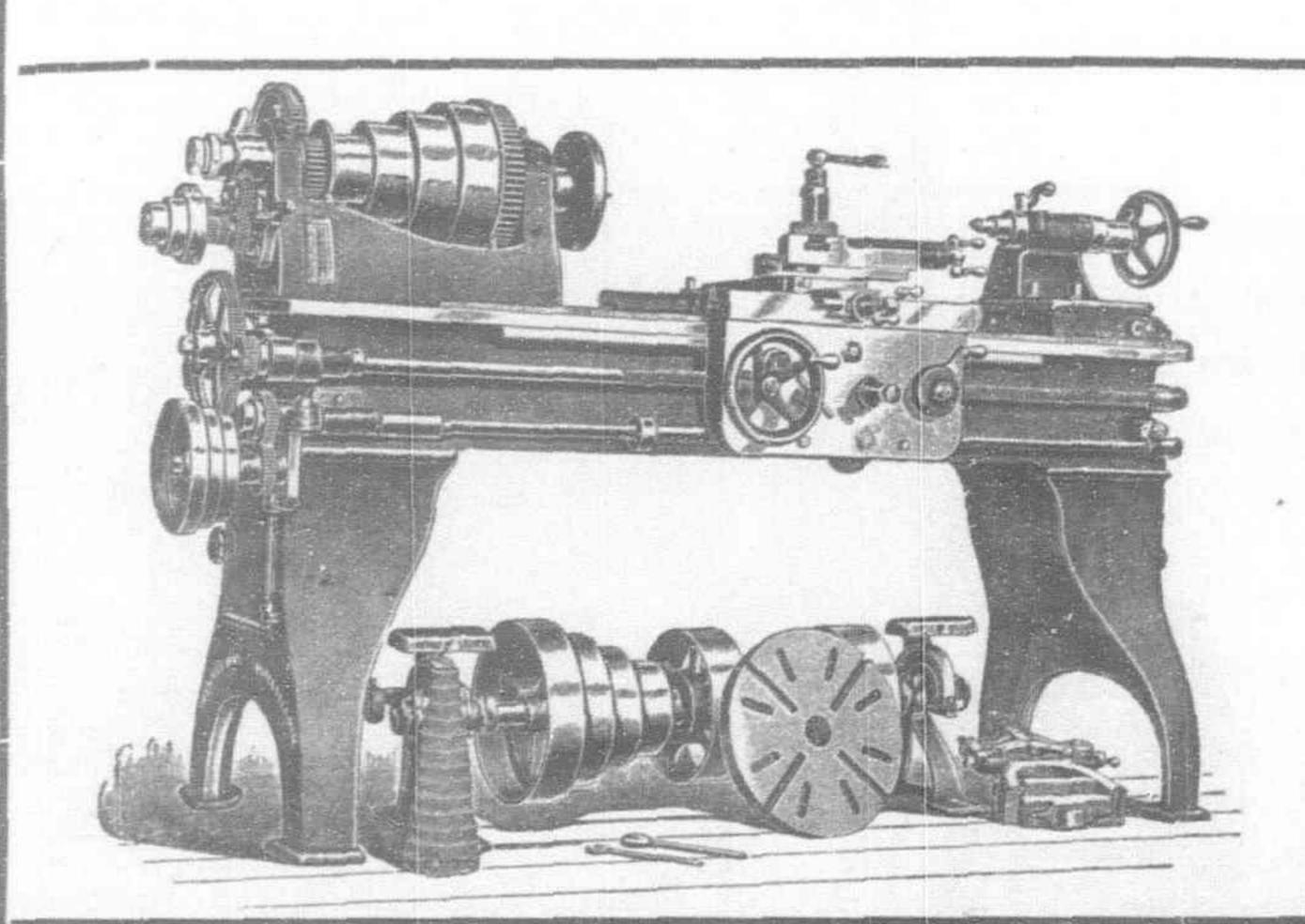
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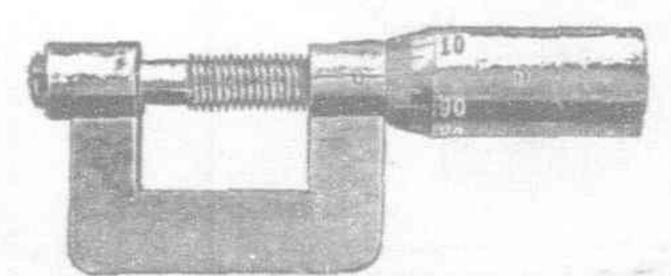
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We are buyers

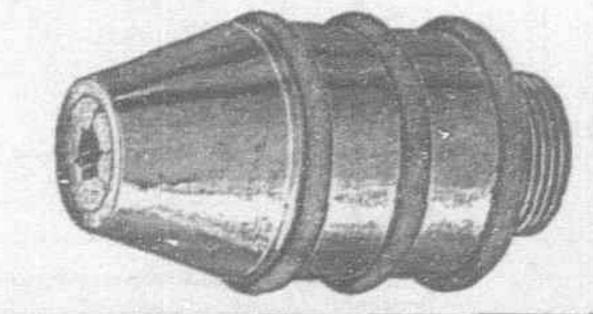
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in the Market.



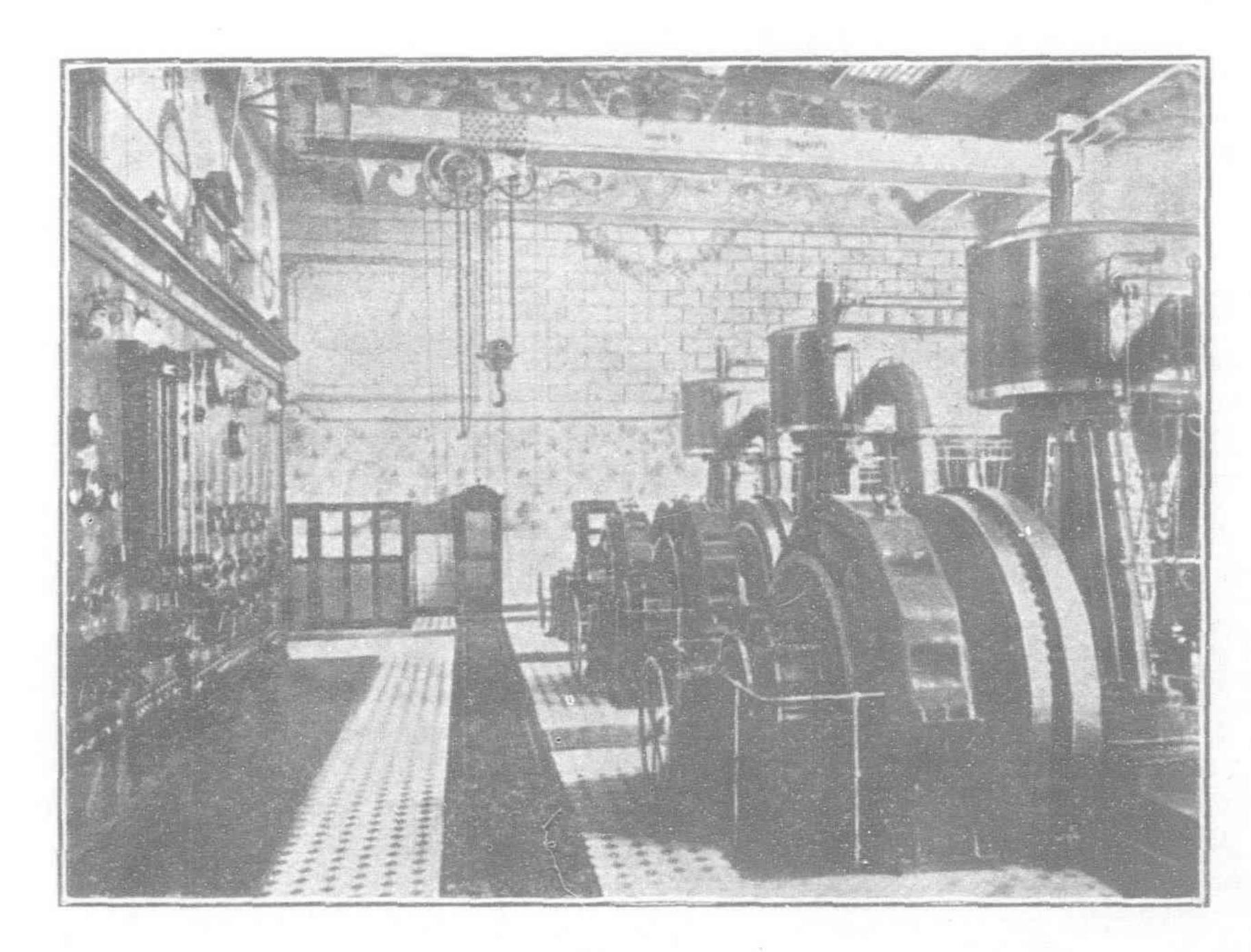


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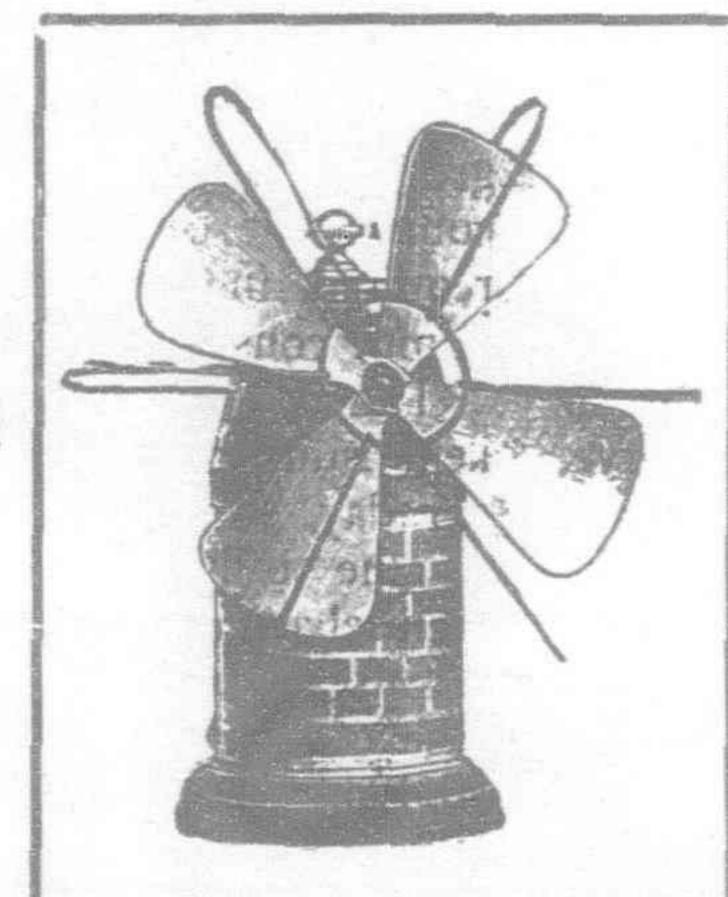
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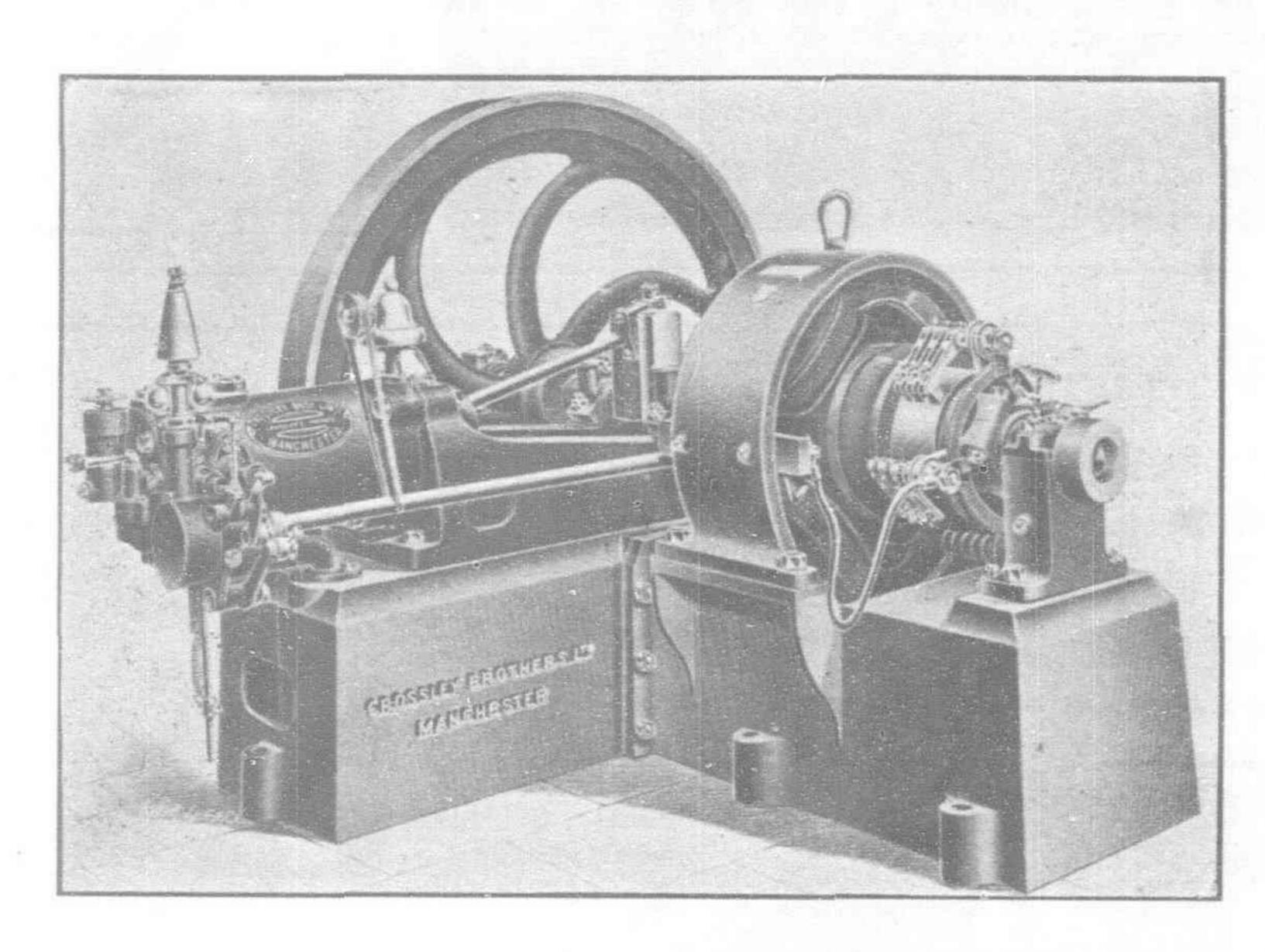
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WORKS: THIBET ROAD, SHANGHAI SHOWROOMS: 31a NANKING ROAD, SHANGHAI

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# CROSSLEY'S GAS ENGINES

INDICATING 34 TO 220 H. P.

MOST ECONOMICAL FOR ALL PURPOSES WHERE POWER IS REQUIRED.

CHAFF CUTTING, PUMPING, WOOD WORKING, PRINTING, HOISTING, PRESSING, WEAVING, SPINNING, MILLING, ETC.

ESPECIALLY ADAPTED FOR ISOLATED ELECTRIC LIGHTING PLANTS

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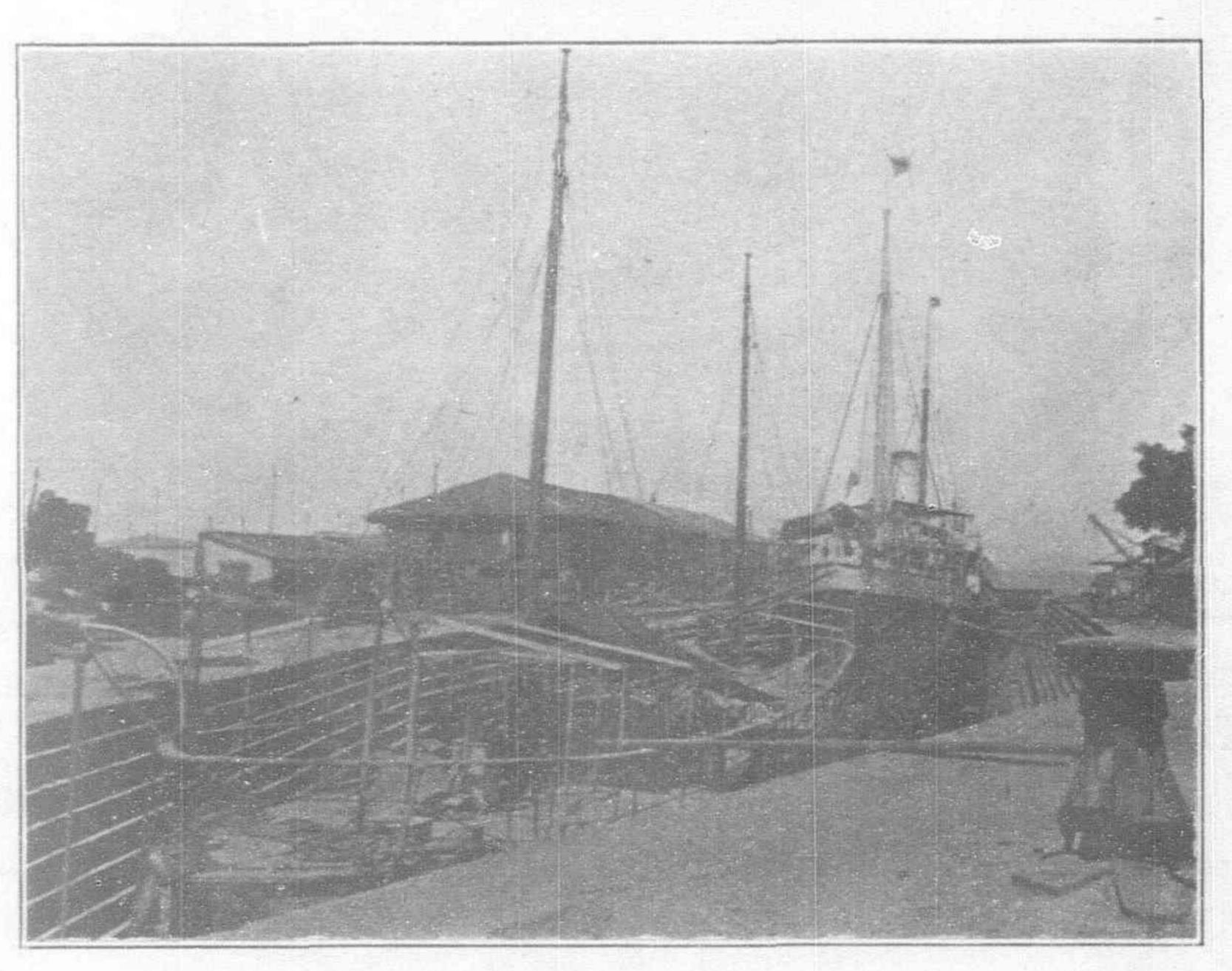
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AMOY, CHINA

# THE NEW AMOY DOCK COMPANY, LIMITED

(ESTABLISHED IN 1892.)

OUR GRANITE DOCK IS A TIDAL SLIPWAY AND HAS AN EXTREME LENGTH OF 360 FT., WITH A LENGTH ON BLOCKS OF 340 FT. IT CAN RECEIVE VESSELS UP TO 330 FT. BETWEEN PERPENDICULARS, 40 FT. BEAM AND A MEAN DRAFT OF 16½ FT. DURING SPRING TIDE, AND 12 FT. DURING NEAPS::::::::

THE MOST CONVENIENT AND SATISFACTORY DOCK FOR PHILIPPINE SHIPOWNERS, ON ACCOUNT OF LOCATION AND DISTANCE: : : : : :



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OUR SLIPWAY IS EQUIPPED WITH THE LATEST MODERN PLANT, AND CARRIES A LARGE STOCK OF MATERIAL FOR THE REPAIR OF SHIPS, ENGINES AND BOILERS : : :

ANOTHER SPLENDID SLIPWAY
IS NOW UNDER CONSTRUCTION, WHICH WILL TAKE UP
VESSELS OF FROM 250 TO
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AMOY, CHINA

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# CHINESE ENGINEERING AND MINING Cº. LTD.

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#### THE COMPANY OWNS

THE COAL MINES NOW BEING WORKED AT TONGSHAN AND LINSI IN THE CHIHLI PROVINCE, AND THE COAL FIELD IN WHICH THEY ARE SITUATED. THE QUALITY OF THE COAL IS SUPERIOR TO ANY NOW BEING MINED IN THE FAR EAST, AND IS SUITABLE FOR STEAMING AND ALL OTHER PURPOSES. THE COKE PRODUCED IS EQUAL TO THE BEST ENGLISH COKE

AND COMMANDS A READY

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#### OUTPUT AND SALES

1,000,000 TONS PER ANNUM
CARGOES DELIVERED BY
COMPANY'S OWN STEAMERS
TO ANY PORT IN THE FAR EAST

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FACILITIES FOR LOADING COAL AT THE ICE
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NORTH CHINA AND THE LUHAN RAILWAY

USE THIS COAL FOR THEIR LOCO
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#### TONGSHAN PORTLAND CEMENT

IS MANUFACTURED FROM THE
BEST RAW MATERIALS BY COMPLETE
AND MODERN MACHINERY UNDER
EXPERT SUPERVISION. UNIVERSALLY
USED THROUGHOUT NORTH CHINA,
AND HAS SECURED THE HIGHEST APPROVAL FOR ITS GOOD QUALITY, CONSTANCY OF VOLUME AND FINENESS::

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DONE WITH STEAMERS

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#### MOSAIC FLOORING TILES

Equal in quality and finish to best European Make, Large Variety of Artistic Designs for Center and Border Tiles to meet any requirement.

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The excellent seams of fireclay in the neighborhood of Tongshan enables us to place in the Chinese market a very superior firebrick at about one fourth the cost of the imported article. Output 50,000 bricks per day. Arch and cupola bricks, boiler seating blocks, and special shapes, made to order.

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For Kitchens, Verandas, Public Buildings, etc., etc., etc., MADE OF FIRE CLAY IN ATTRACTIVE DESIGNS

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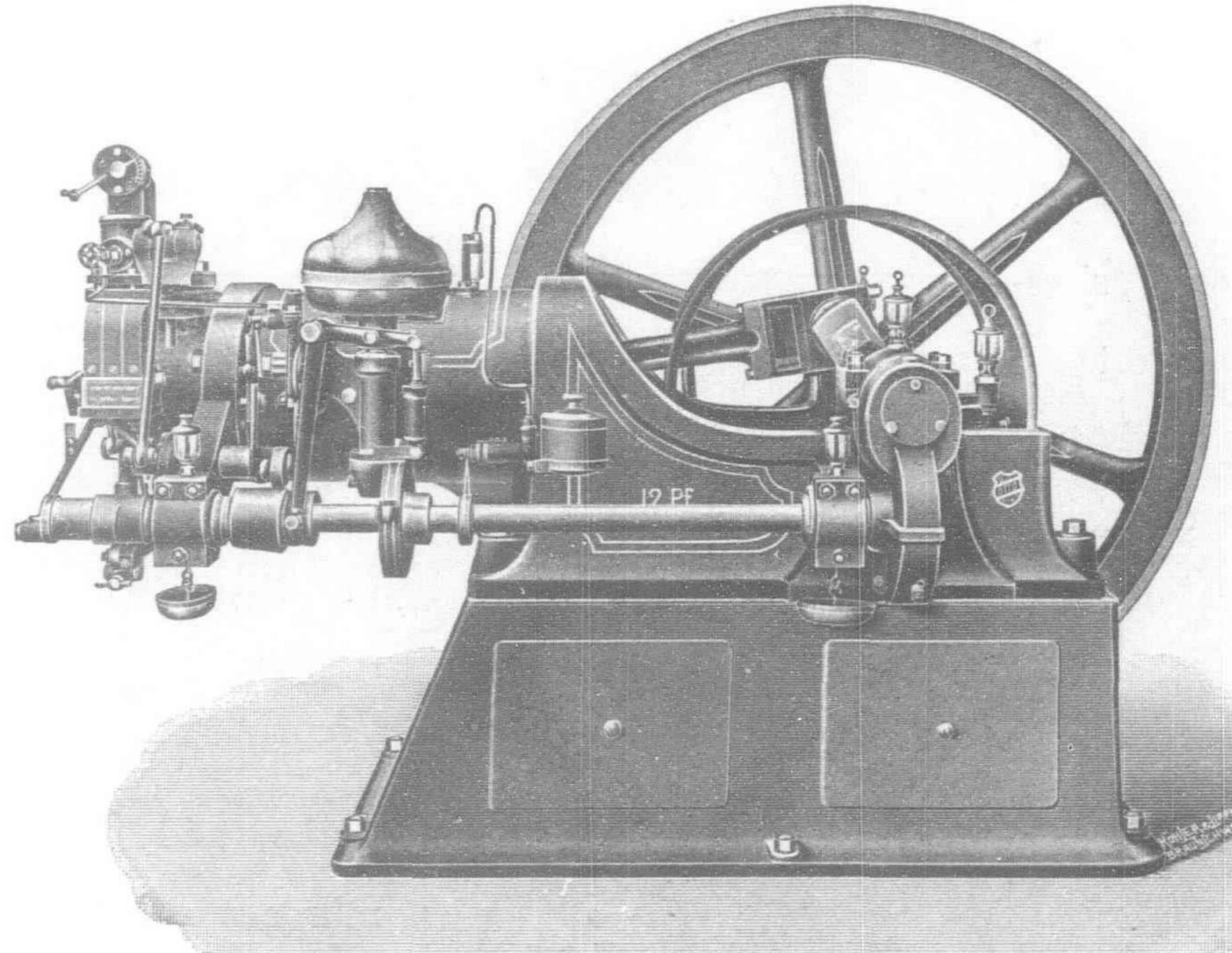
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First and Oldest Gas Engine Works

This Engine is
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over 40 years'
experience and
experiment



Medals and Diplomas Over
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in use, aggregating
450000 HP.

Type E 10

# Original "OTTO" Oil Engine

with positively controlled valve motion and electric ignition.

These engines may be seen and inspected at any time at our

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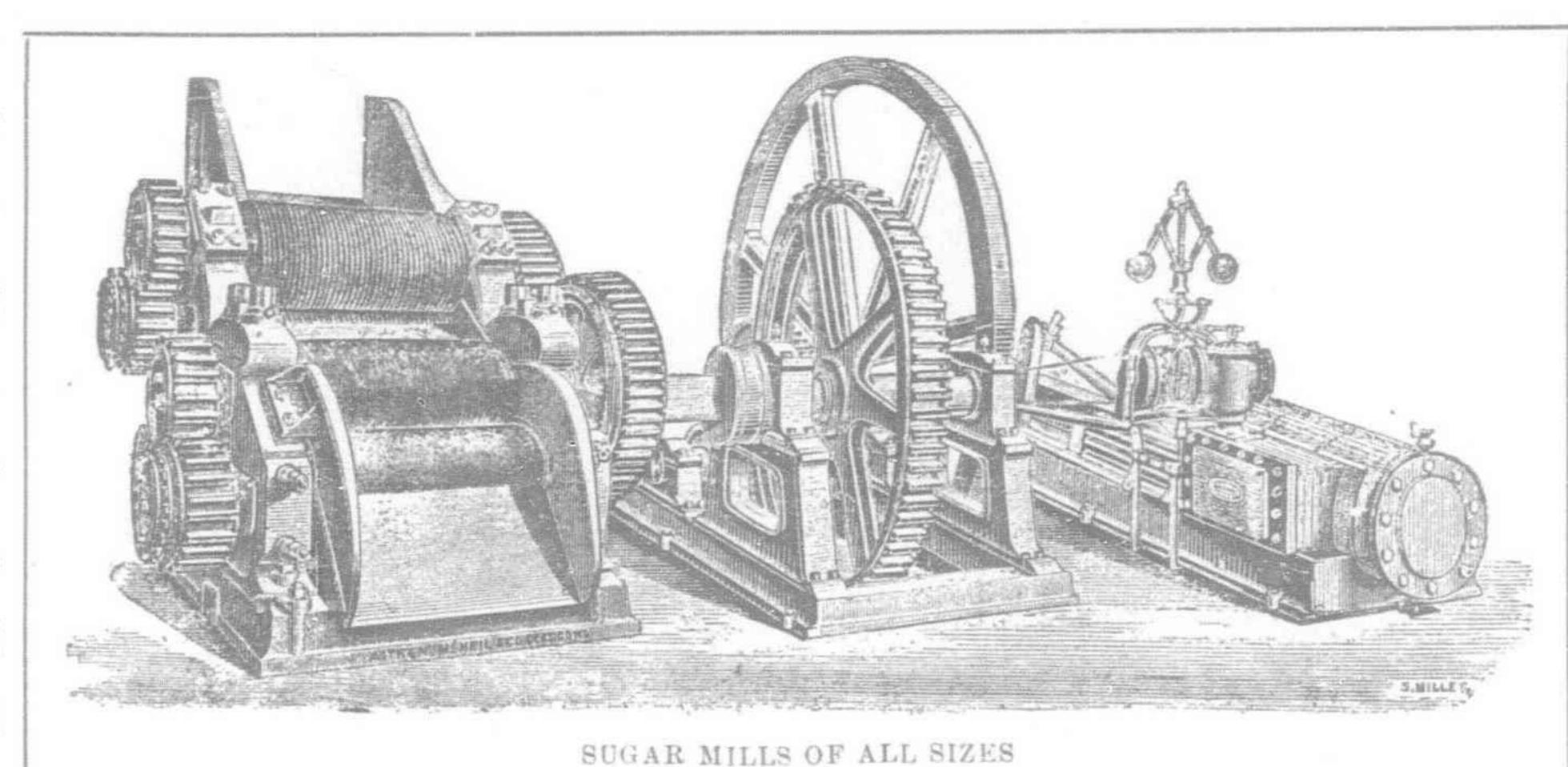
100 Escolta (Rear-building)

ESTIMATES AND INFORMATION FURNISHED FREE

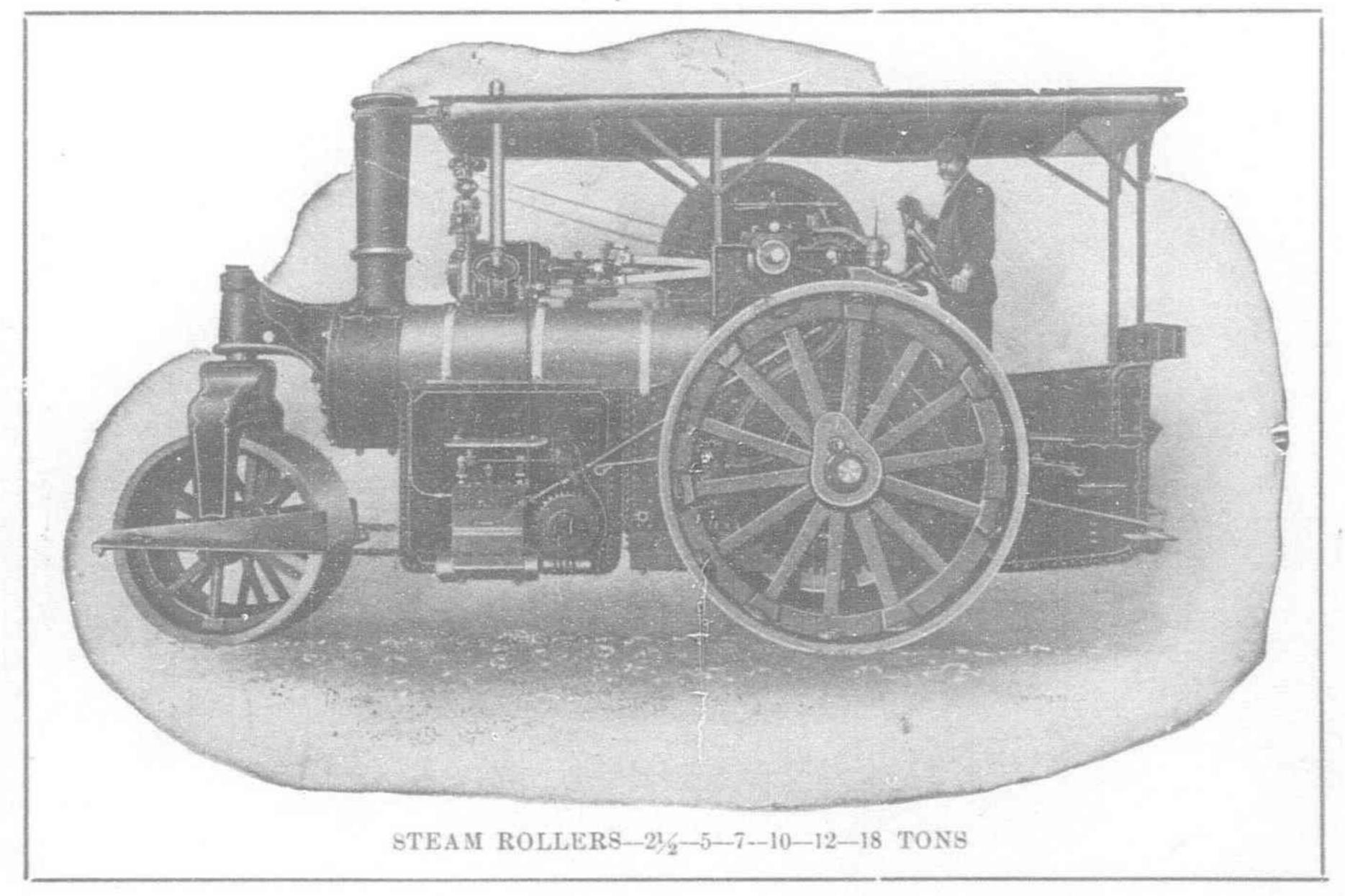
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WIND MILLS for Irrigation—
Modern Farm Plants—Small City
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Cart Wheels.—All sizes locomotives for plantations, custom houses, public works and large locomotives for railroads—Rock drills—Coal Cutters—Stone channeling machine—Complete mining, tunneling and quarrying plants.—Forges—Blowers—Drills—All kinds of tools—Derricks of all kinds for harbor improvements, custom house docks, buildings, railway and bridge construction.

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Manila, P. I.

## YOKOHAMA SHARE QUOTATIONS

COURTESY A. C. HUTTON POTTS, SHARE AND GENERAL BROKER, YOKOHAMA, OCTOBER, 1905.

STOCKS.	CAPITAL.	NO. OF SHARES.	ISSUE VALUE.	AMOUNT PAID UP.		AT WORKING ACCOUNT OR CARRIED FORWARD.		LAST DI- VIDEND.	The second secon	CLOSING QUOTATION.
	Y.		Y.	Υ.						
Brett & Co., Limited	28,000	2800	10	10			30/6/03	6%	for I year	7 Nominal.
Club Hotel, Limited	185,000	1850	100	100			31/3/04	7%	,, i year	45 Nominal.
Grand Hotel, Limited	250,000	2500	100	100		Y.2,608.34	30/6/05	6%	,, ½ year	210 Sales.
Helm Bros., Limited	186,000	3720	50	50		Y.8,349.06	31/12/04	171/2%	,, I year	75 Sales.
Langfeldt & Co., Limited	150,000	1500	100	100		Dr.30,174.81	30/6/05		1. 1/2 year	32 1/2 Buyers.
C. Nickel & Co., Limited	125,000	5000	25	25		10,572.91		200		32 1/2 Sales.
Japan Brewery Company, Limited	450,000	9000	50	50	170,000	4,781.87	31/12/04		, I year	95 Sellers.
Yokohama Engine and Iron Works	130,000	2600	50	50	20,000	Y.5.935-35	31/5/05	20%	,, I year	So Sales.
Hirano Mineral Water Co., Ltd	125,000	5000	25	25				1st year		25 Sellers.
Oriental Hotel, Ltd., Old Ordinary		1490	50	50			31/8/04	12%	,, r year	75 Nominal.
,, New ,,		1510	50	25						
,, Old Preference	251,000	750	50	50	47,819.90			8%		63 Sales.
,, New ,,		1250	50	25						
,, Founders		80	121/2	121/2				Y.37		500 Sales.

DEBENTURE LOANS.	AMOUNT OF LOAN.	FACE VALUE OF DEBENTURES.	RATE OF INTEREST.	INTEREST PAYABLE.	CLOSING QUOTATION.	
Japan Brewery Company, Limited	200,000.00 11,500.00	100.00	7%	I April and I October.  I June and I Dec.	108 Sales. 95 Sellers.	
Yokohama United Club	250,000.00	100.00	7% 8%	30 June and 31 Dec.  1 May and 1 Nov.	108 Sales. 110 Sellers.	

# FAR EASTERN ENGINEERING AND CONSTRUCTION NEWS

(Concluded from p. 162.)

\$70,436,471. The increased value in Penang exports is due chiefly to a huge increase under the head of "Raw Metal," chiefly tin, \$6,990,012 to \$10,425,711. Manufactured articles exported increased from \$503,988 to \$1,122,176.

#### FINANCIAL NEWS.

CHINESE ENGINEERING AND MINING COMPANY, LTD.— This well-known company has declared a dividend (No. 5) of 1 shilling per share,

Money for Railway Development, China.—The Chinese Government is borrowing a further sum of 12,700,000 francs (£508,000) from Belgium capitalists for railway extension.

NANKAI (JAPAN) RAILWAY COMPANY.—This Company has obtained the sanction of the authorities to increase its capital by -Y-700.000 in order to start an electric tram service on its railway.

Canton Insurance Company.—The report of the directors of this company shows the balance at credit of 1904 account is \$661,540.38. A dividend of \$20 per share, amounting to \$200,000, has been declared.

NEW GOVERNMENT BANK, PEKING. — A new government bank, known as the Ta Chang, has recently been opened in Peking. The manager is H. P. Chen, and Chang Yun and Jui Feng are directors.

CHARTERED BANK OF INDIA, AUSTRALIA AND CHINA.—
Advices from the London office of this corporation
are to the effect that the directors have declared
an interim dividend for the half-year ended June
30th, 1905, at the rate of 12 per cent per annum,
free from income tax.

GREAT GERMAN BANK IN FAR EAST.—It is reported in Japanese papers that the German Imperial Bank, the German Asiatic Bank, and the Bank of Berlin, in conjunction with other leading financial institutions, are about to found a great joint bank in the Far East, with a capital of -Y-300,000,000. It is believed that headquarters will be at Shanghai with a branch at Yokohama.

STRAITS SETTLEMENTS ESTIMATES, 1906.—The following expenditure for special services appears in the esti-

mates of the Straits Settlements for 1906:—New tug, dredger, and barges, Penang, \$150,000; one-fathom light, \$138,500; farm premises at Sungei Pinang, \$128,000; ball-room, Government House, \$120,000; Tan Tock Seng's Hospital, \$115,400; new lunatic asylum, \$100,000; Singapore River bridge, \$100,000.

Tanjong Pagar Dock Company, Singapore.—In connection with the expropriation of this property by the British Government, with a view to the consumation of which a board of arbitration is now sitting at Singapore, the dock company has formally announced its claim against the government, which is £9,000,000. The shares of the company not long ago stood at \$200, but on the basis of the claim their value has shot up to £200 each.

Hokkaido Colliery and Railway Company, Japan, —This company has concluded negotiations with London capitalists for the issue of the company's debentures in London to the amount of £1,000,000. They will carry interest at 5 per cent, the issue price is £91%, term of redemption 15 yrs., and security the whole of the company's property. The debentures will be indorsed by the Industrial Bank of Japan, and the company will receive the whole amount of the loan at London early in 1906 for the debenture bonds.

Province have proposed the following four schemes to be carried out regarding the Shanghai-Nanking Railway:—(1) To reduce the loan to £1,000, 00; (2) to cancel the agreement of having 2½ per cent premium in redemption of the loan; (3) to stop the issue of bonds for £250,000, being the funds for the purchase of necessary land; (4) to complete the work within 3 yrs to avoid expense and interest. The Board of Commercial Affairs at Peking is asked to memorialize the above to the Throne.

OSAKA SHOSEN KAISHA, LTD -The balance sheet of this steamship line for the first half of the current year, shows that a net profit of -Y-482,934.122 was realized, and this, after alloting -Y-187,000 to the reserve fund for ships' insurance, -Y-297.000 to reserve for ships' repairs, and -Y-214,000 to depreciation fund. The total profit, including amount placed to reserve, therefore, was -Y-1,180,934.122. A further sum of -Y-24,500 has been placed to reserve, directors' and auditors' bonuses amounting to -Y-24,500 have been paid and a dividend of 10 per cent per annum, -Y-366,666 667, has been declared. The balance (together with -Y-651,642.057, a total of -Y-718,909.512) has been carried forward. The reserve fund for ships' insurance has a credit balance of -Y-863,288,566, and the reserve fund for ships' repairs has at credit -Y-255,646.096.

SINGAPORE COLD STORAGE COMPANY, LTD -At the third ordinary general meeting of this company, held recently in Singapore, the directors reported that the buildings of the company cost \$127,025.02 and the plant and machinery \$52,933.66. The whole outlay to and including March 31st, 1905, not properly chargeable to buildings and plant, is debited to preliminary expenses, which now stand at \$60,-136.36. Regular sales and distribution of frozen supplies were begun April 1st, 1905, and the result of operations since that date is a profit of \$4,676.86. which is considered quite satisfactory for the first 3 mos. The profit has been written off to preliminary expenses, thereby reducing the latter account to \$55,459.50, and the shareholders have decided that this amount shall be gradually extinguished by regular annual transfers from profits extending over a period of 10 yrs.

HONGKONG-CANTON RAILWAY. - The Legislative Council of Hongkong has passed an ordinance authorizing the raising of a loan of £2,000,000 for the Kowloon-Canton Railway and other purposes. In addition to authorizing the raising of funds for the construction of the Hongkong section of the railway the bill is also connected with the agreement with Viceroy Chang Chih-tung in reference to the purchase of the Hankow-Canton line from the Morgan Syndicate. The Hongkong Government devotes £1,100,000 sterling on behalf of the viceroys and governors of Hupeh, Hunan and Canton, and their successors, to redeem the Hankow-Canton line from the Americans. The first payment of £400 000 sterling has been made by the Hongkong Government to Shang Kung-pao at Wuchang, through the Hongkong and Shanghai Banking Corporation, and £700,000 has been forwarded by the Chinese Government to the Chinese Minister at Washington as first payment for the redemption of the concession and the property.

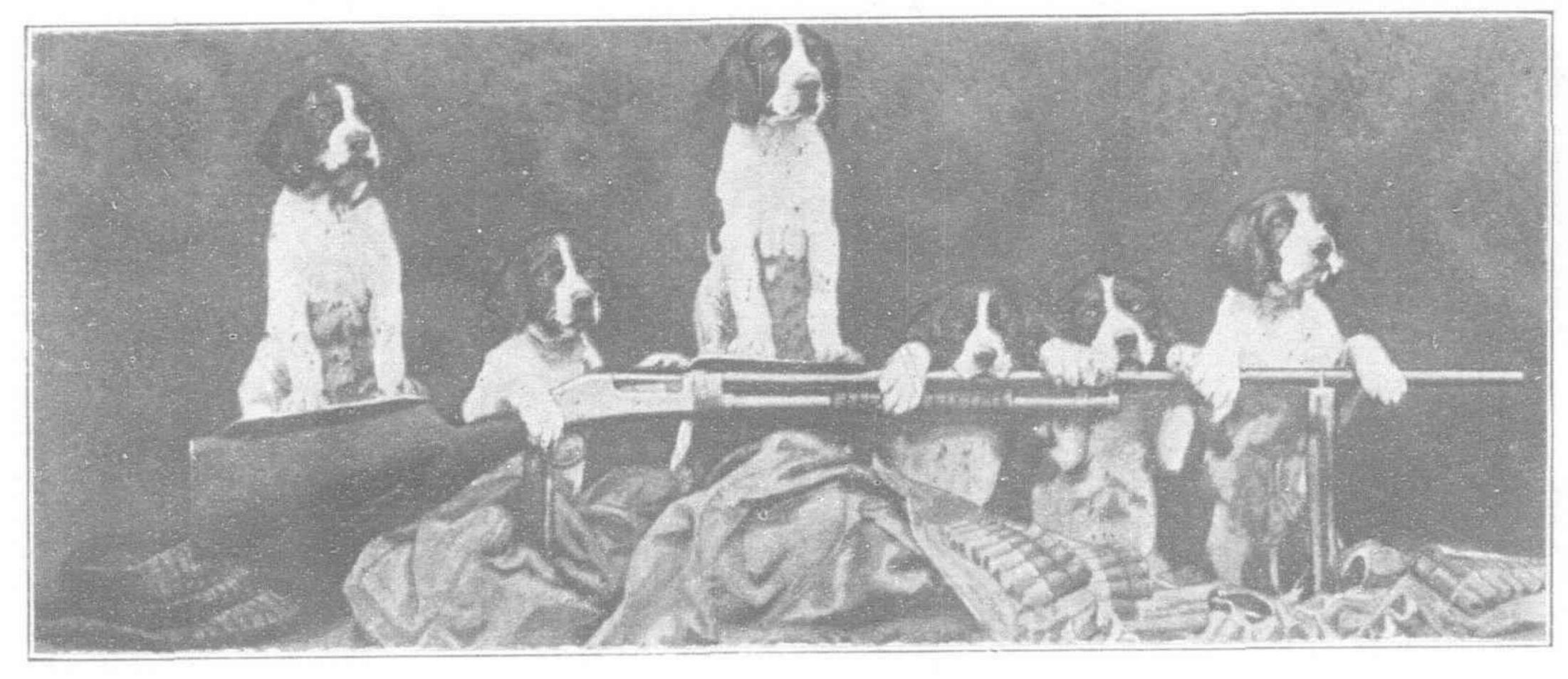
TANJONG PAGAR DOCK COMPANY, SINGAPORE.-The directors' report of the Tanjong Pagar Dock Company, covering the first half of the current year. says that the new amount of profit, which would under ordinary circumstances be available for distribution, including the sum of \$206 645.42, brought forward from previous account, was \$891,675.02. The directors have recommended that the government should be requested to pay over the sum to the company in accordance with the provisions of Section 6 of the Tanjong Pagar Dock Ordinance 1905, and that out of this sum, when received, a dividend at the rate of \$24 per share should be paid for the half-year on the subscribed capital of the company. The company will, under the provisions of Section 22 of the same ordinance, be entitled to be paid from June 30th, 1905, until the amount awarded by the court of arbitration to the company shall be paid or satisfied, interest at the rate of 12 per cent per annum on the ssued ordinary share capital of the company.

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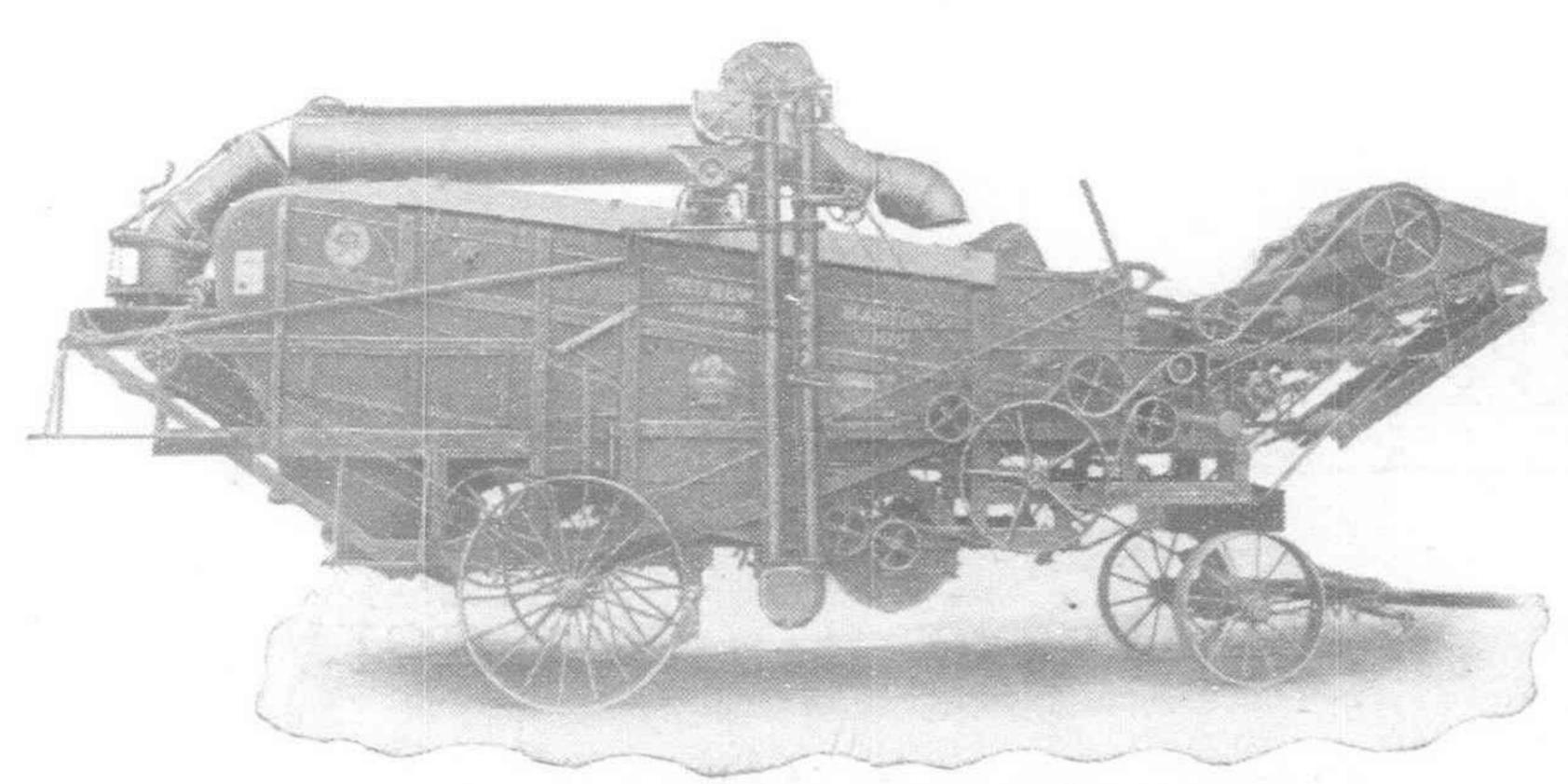
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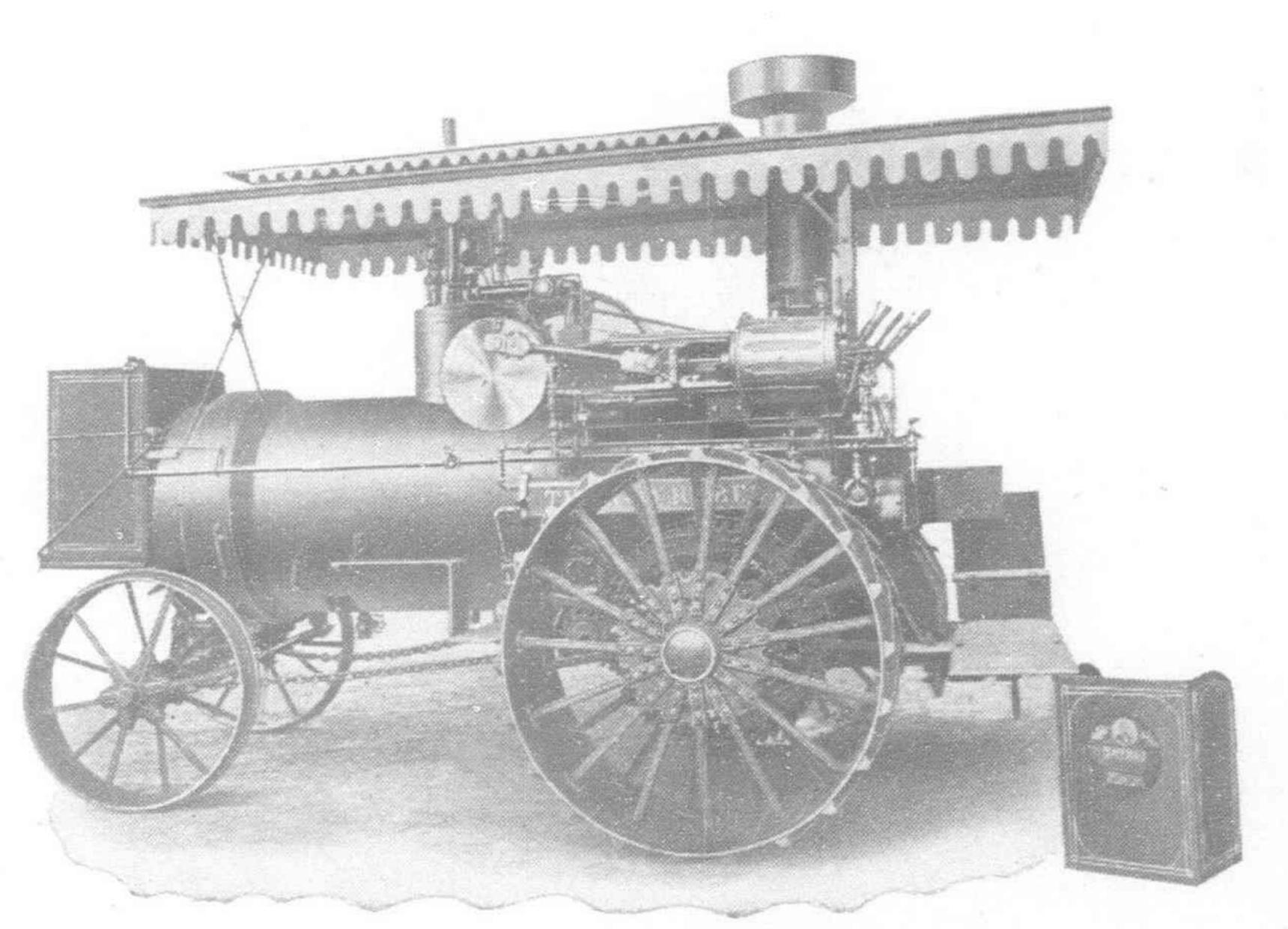
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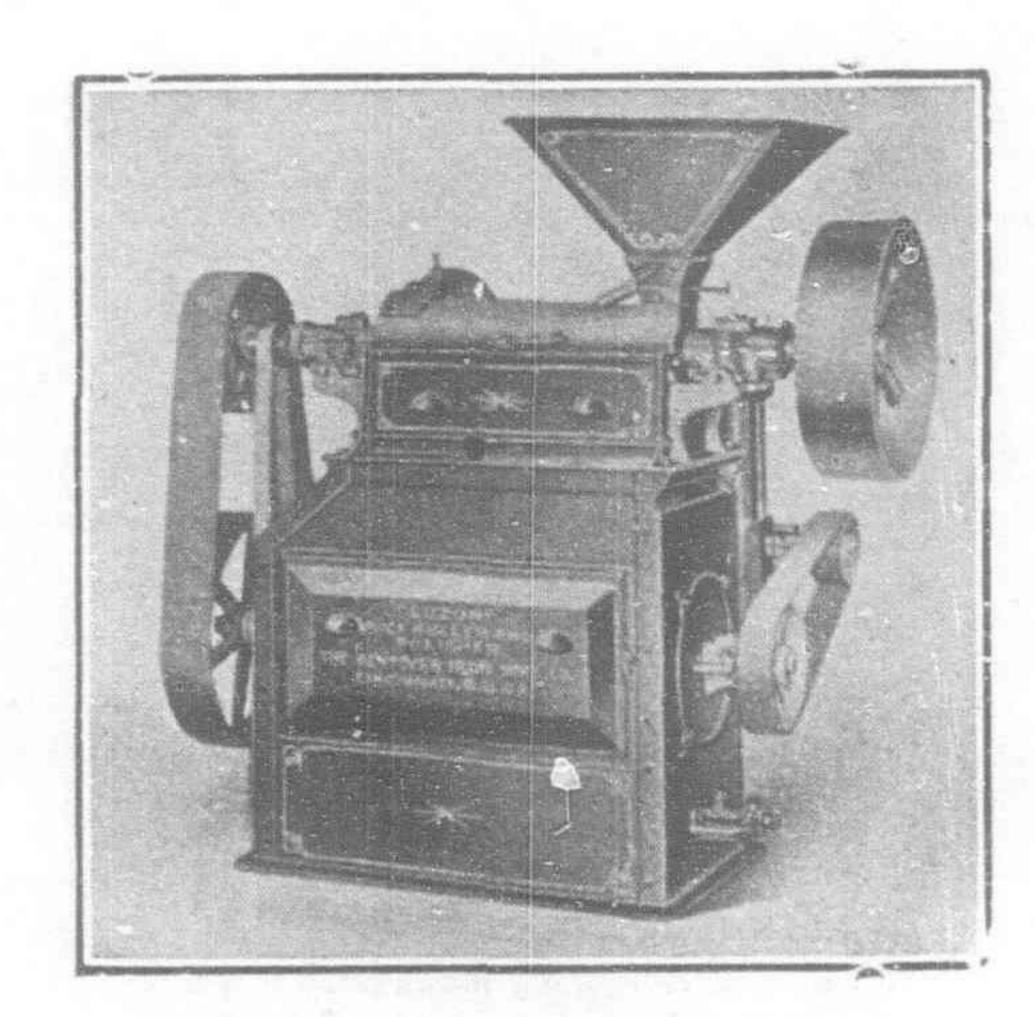
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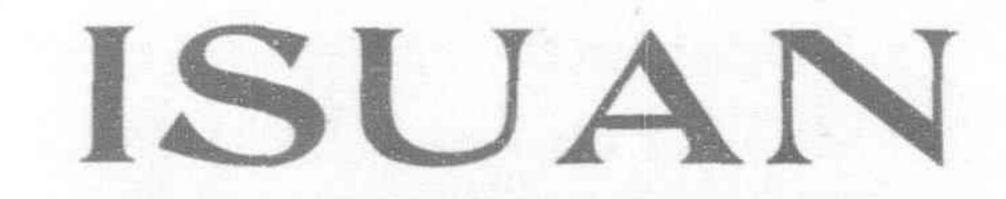
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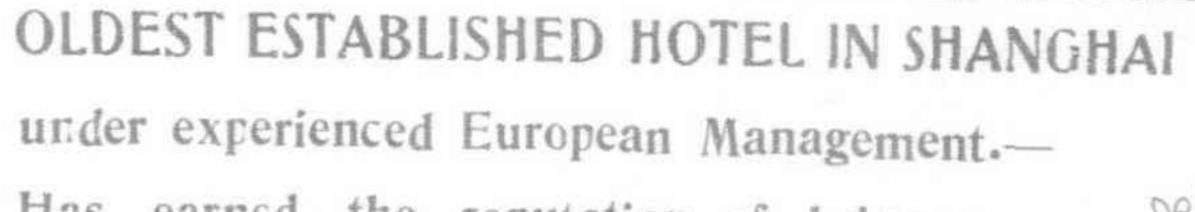
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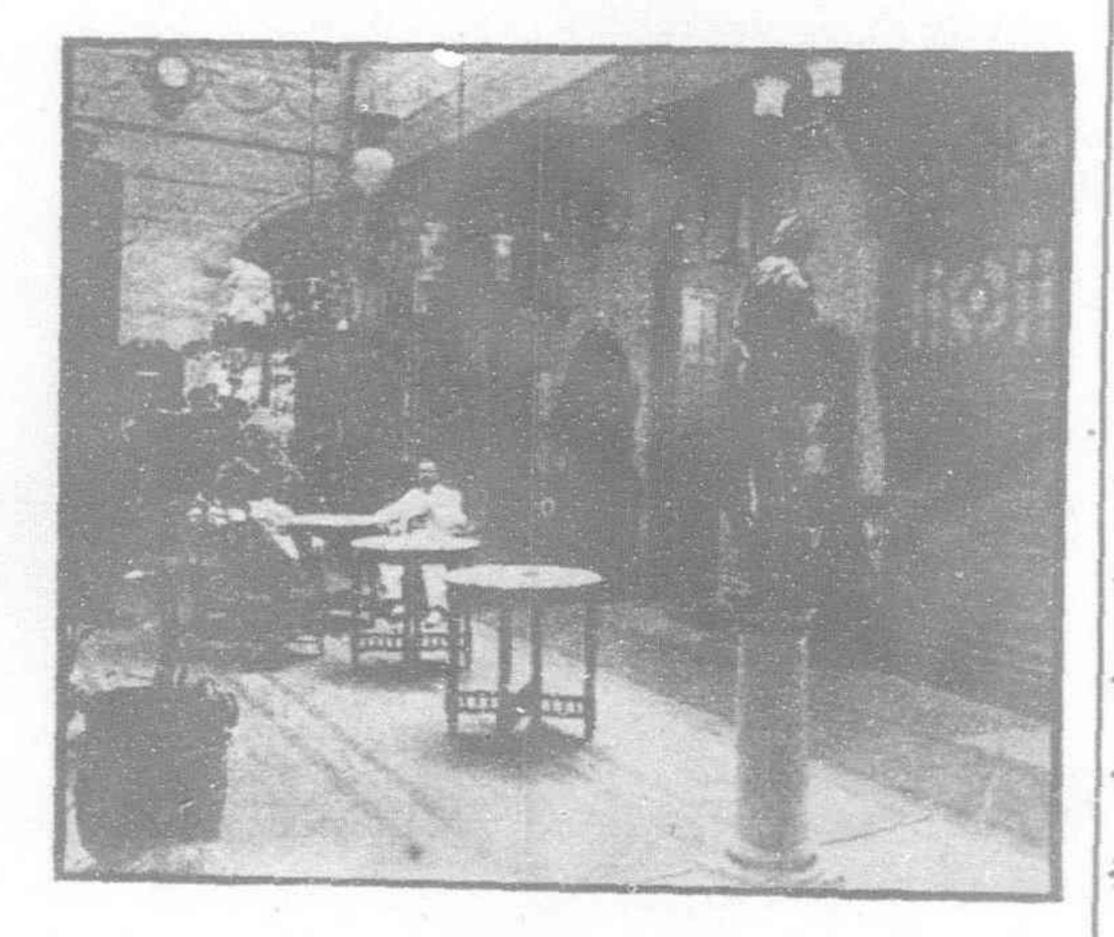
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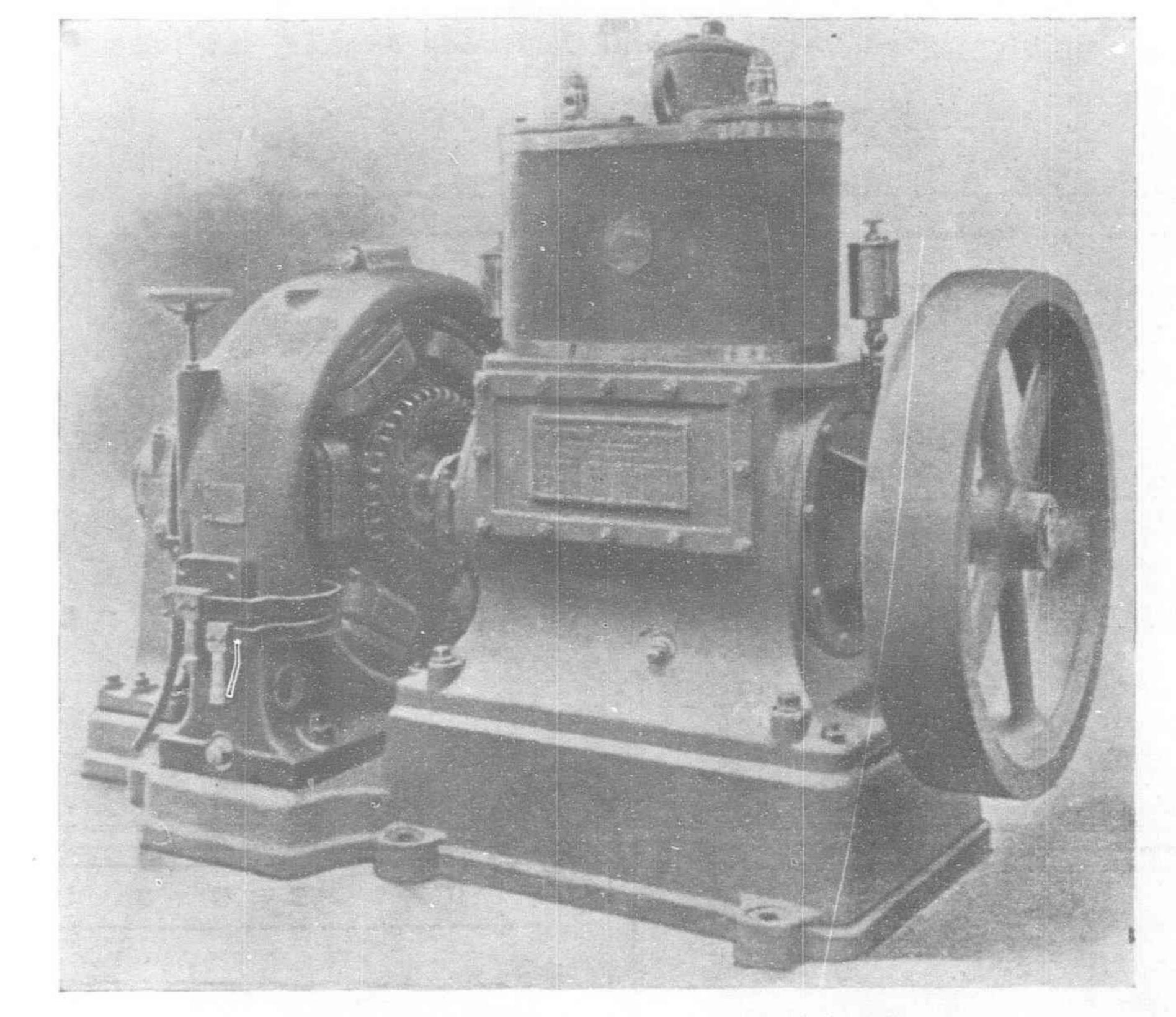


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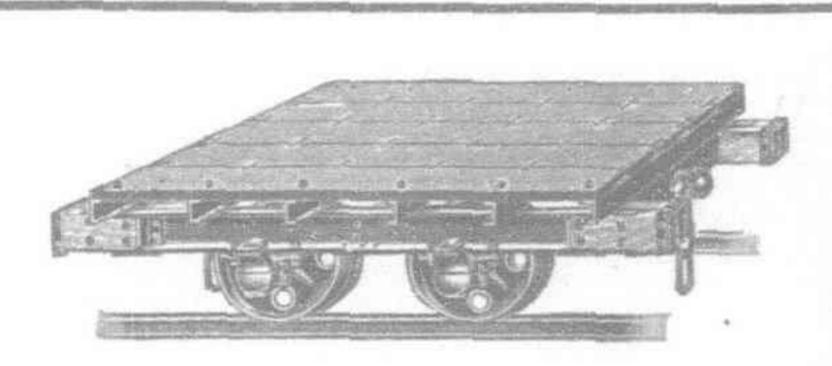
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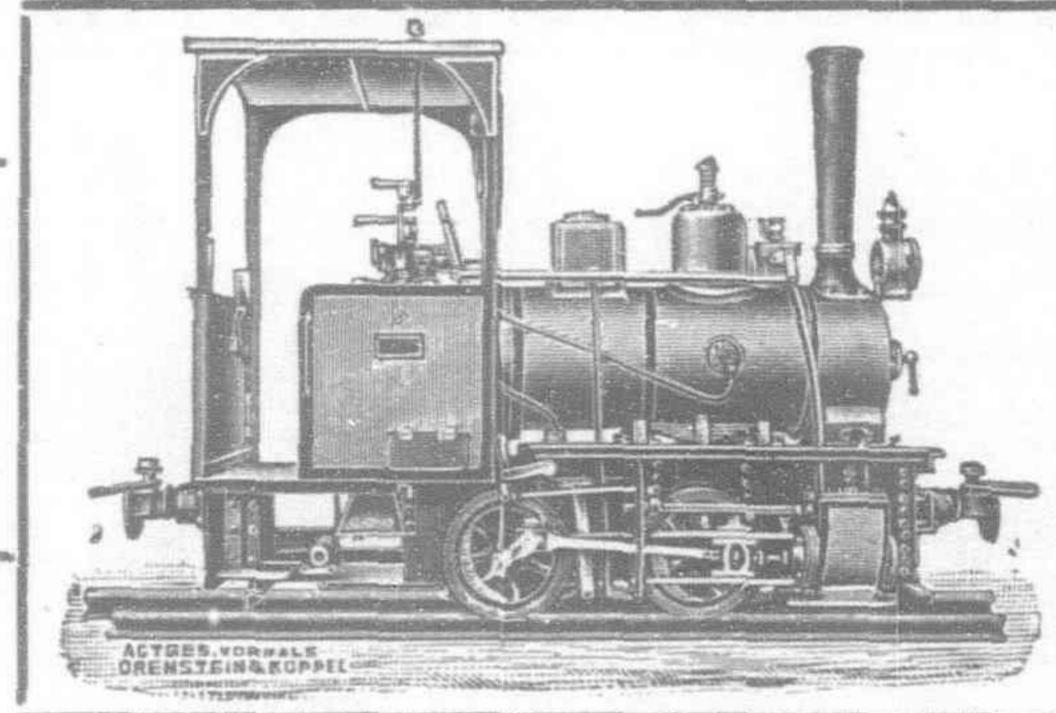
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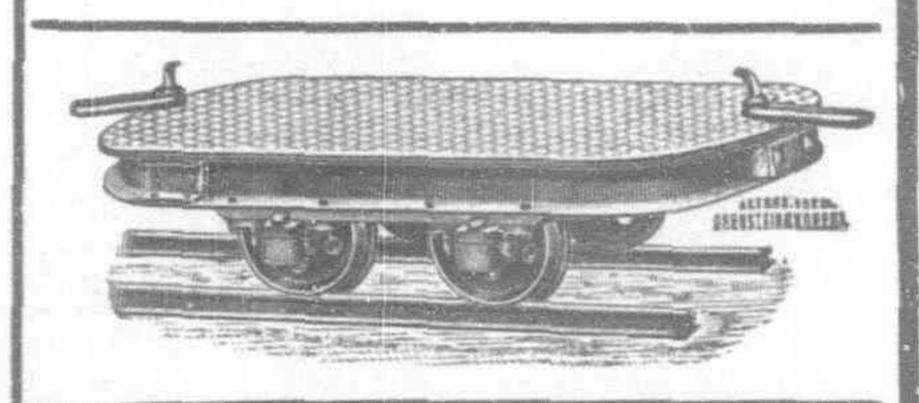
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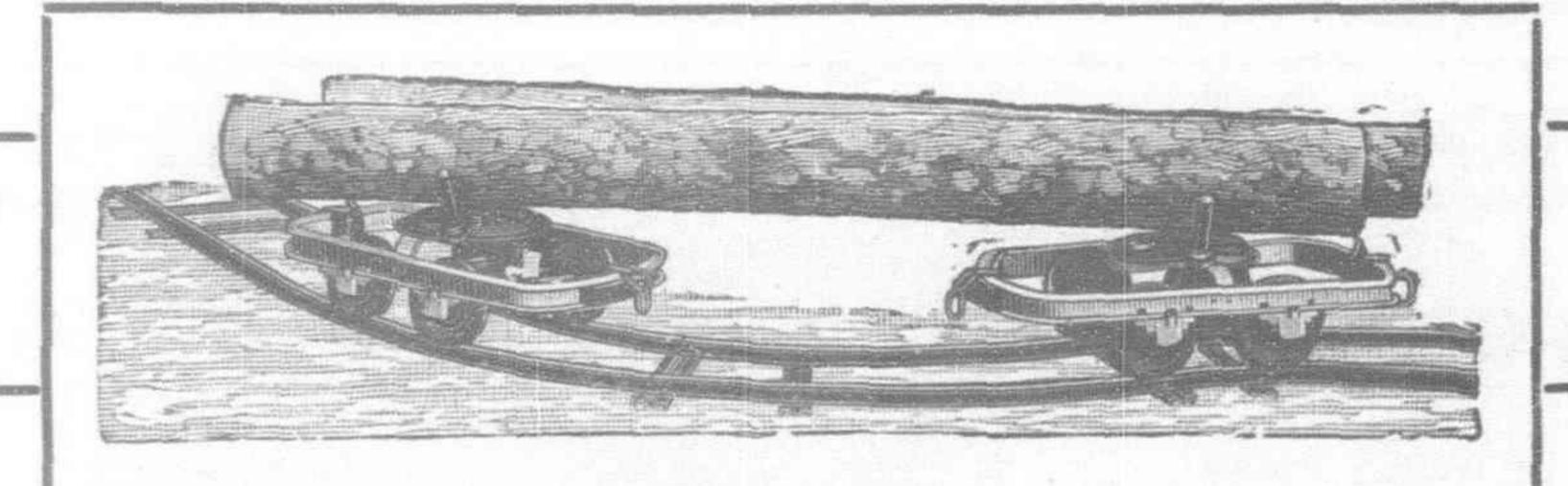
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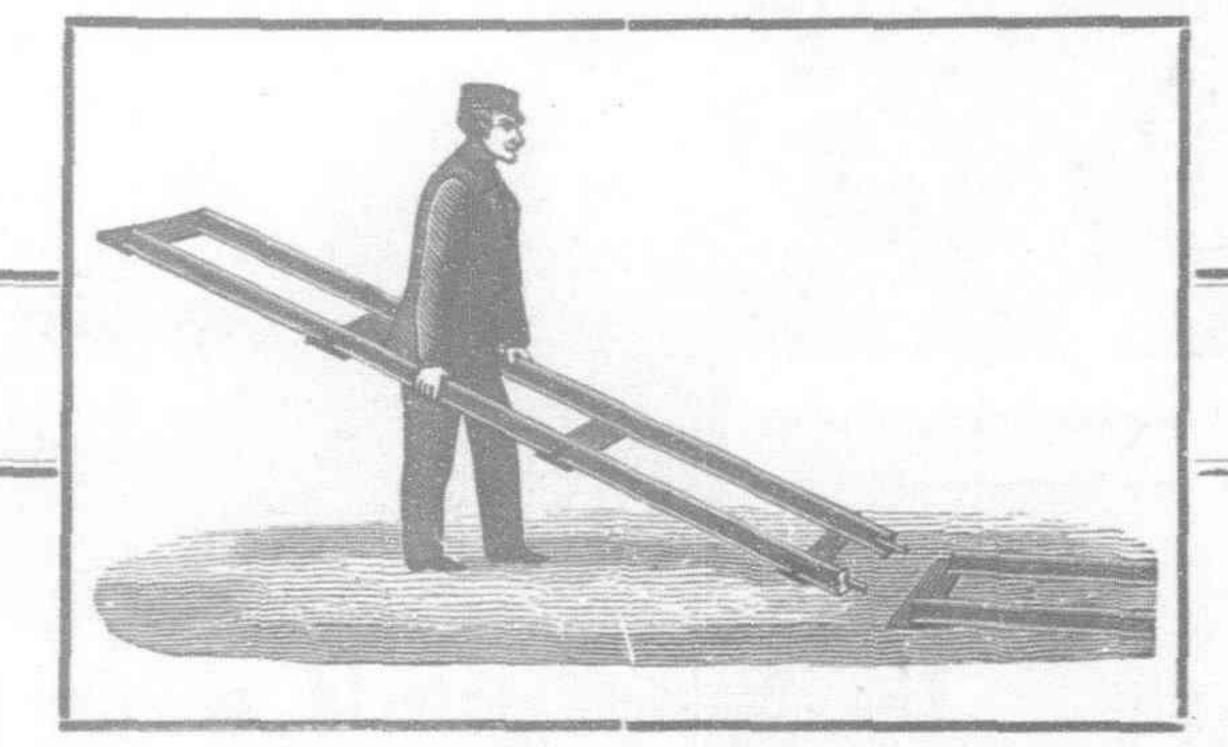
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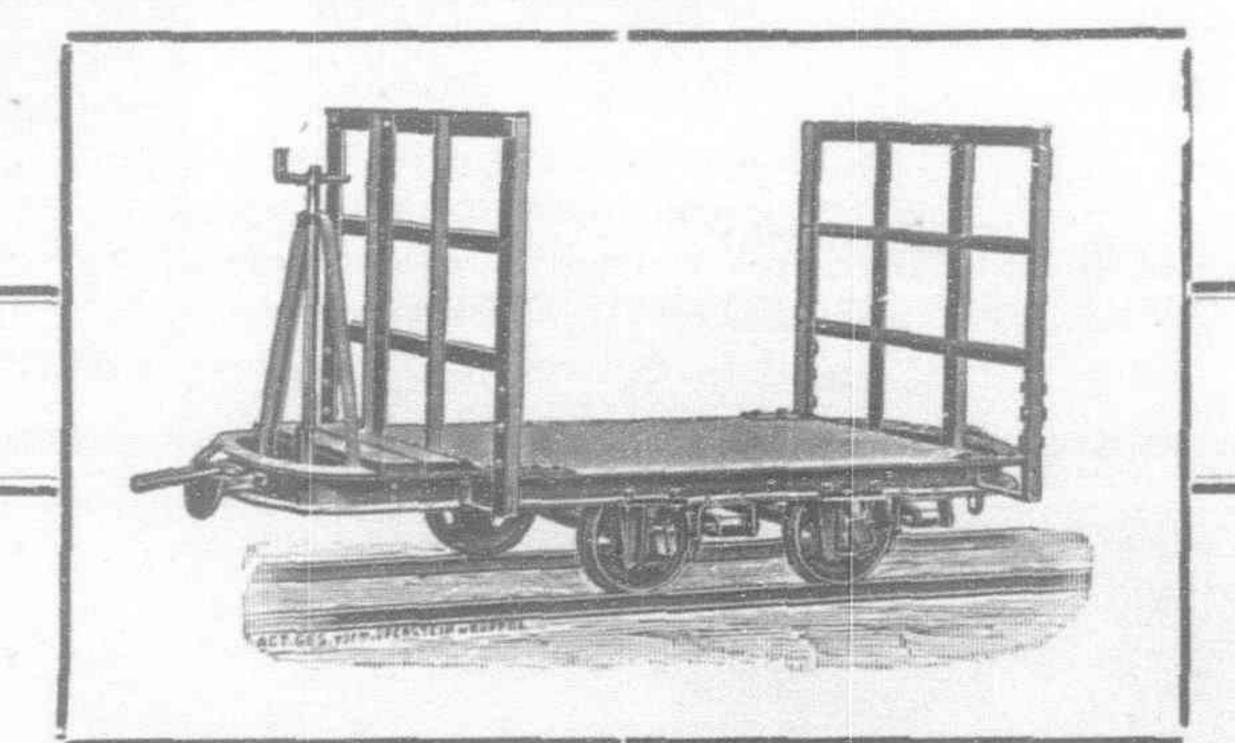
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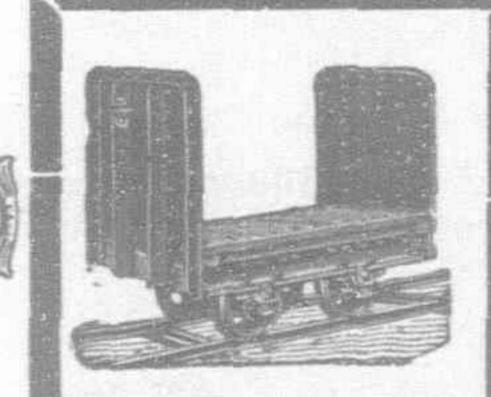


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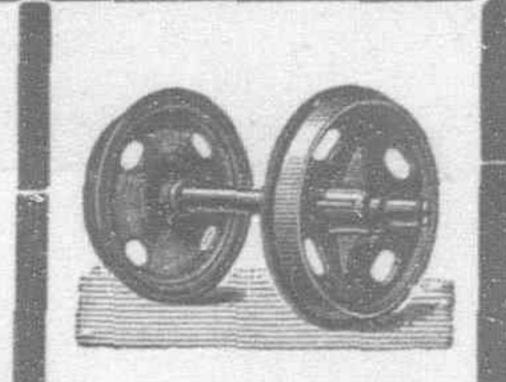


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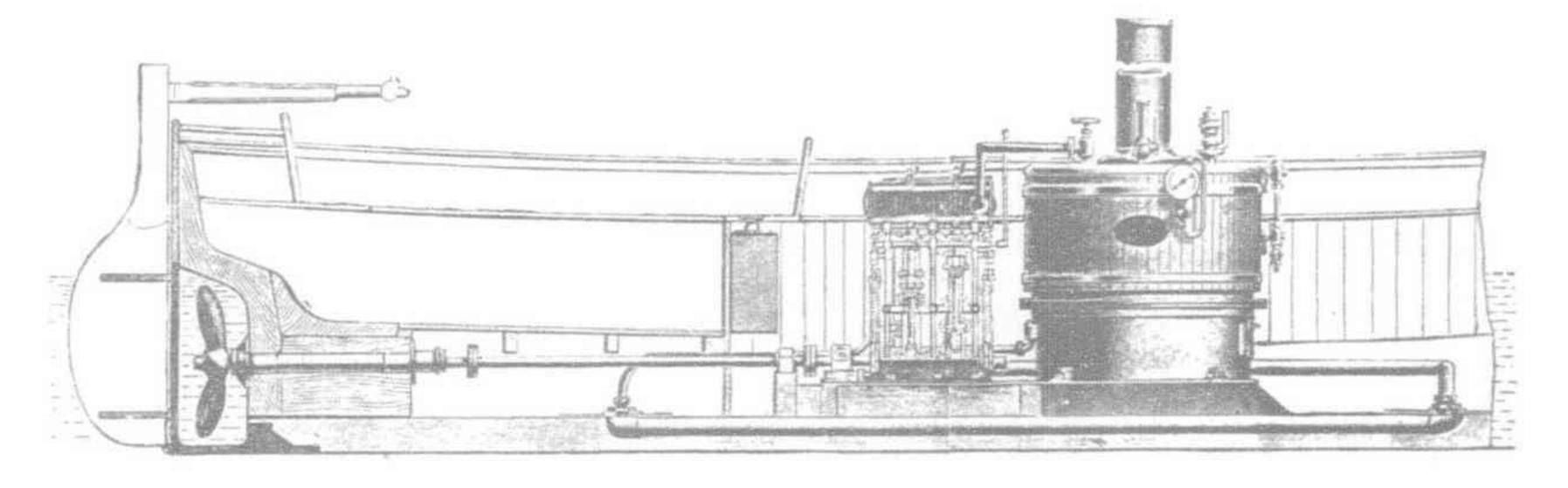


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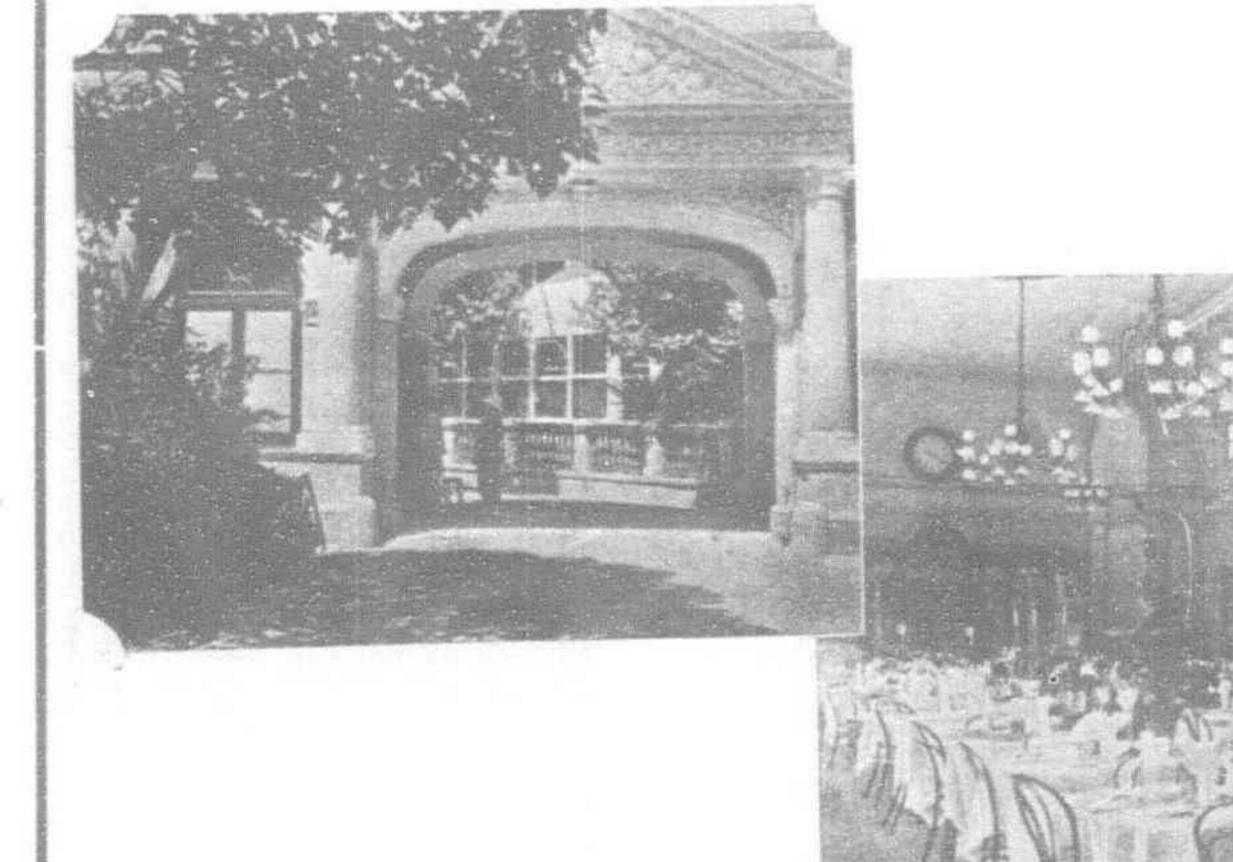
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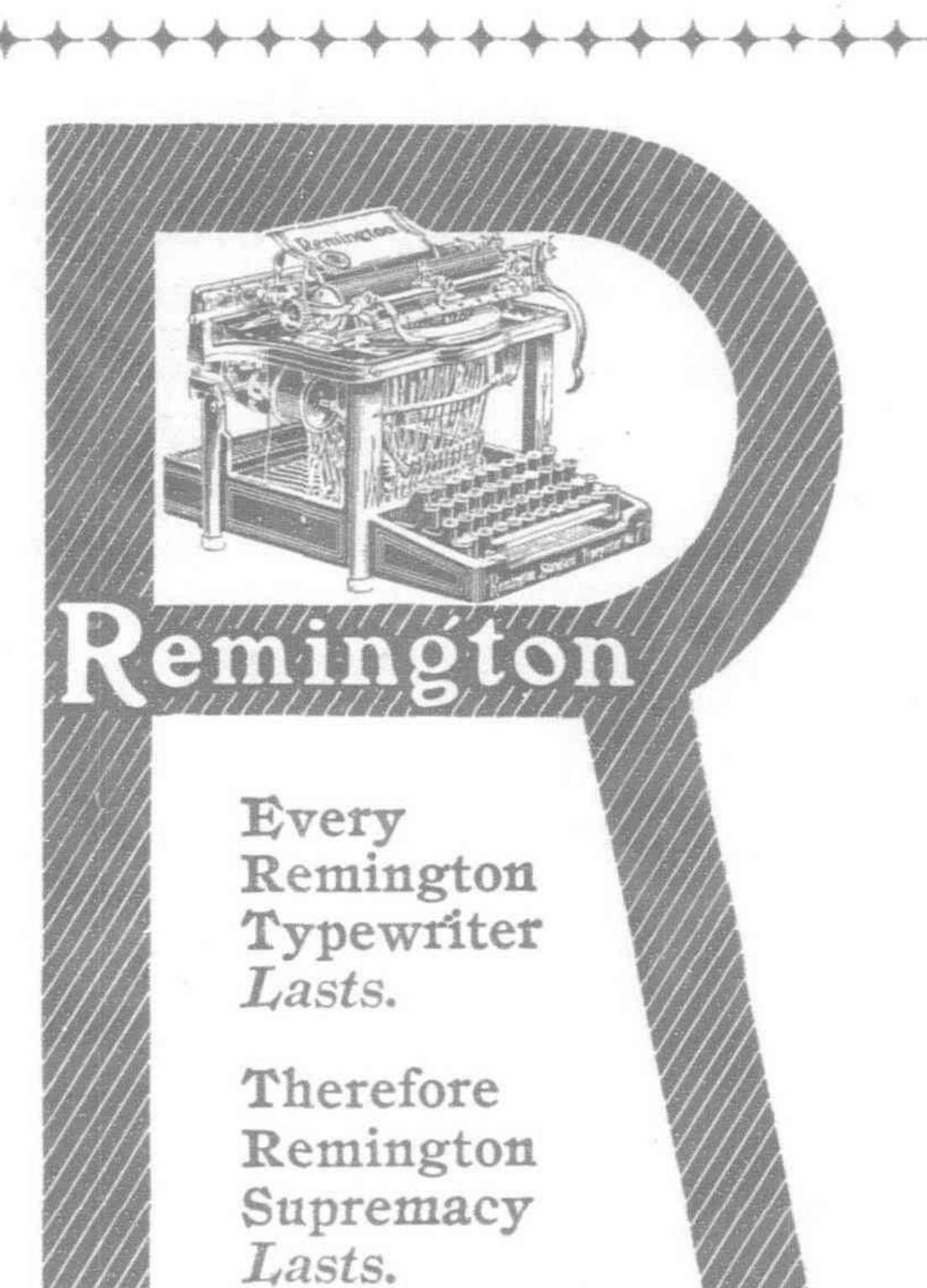
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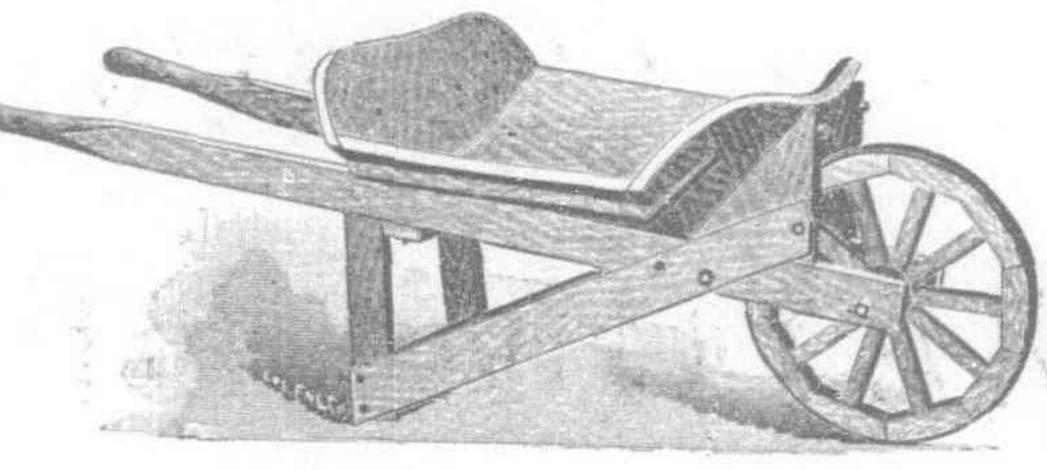
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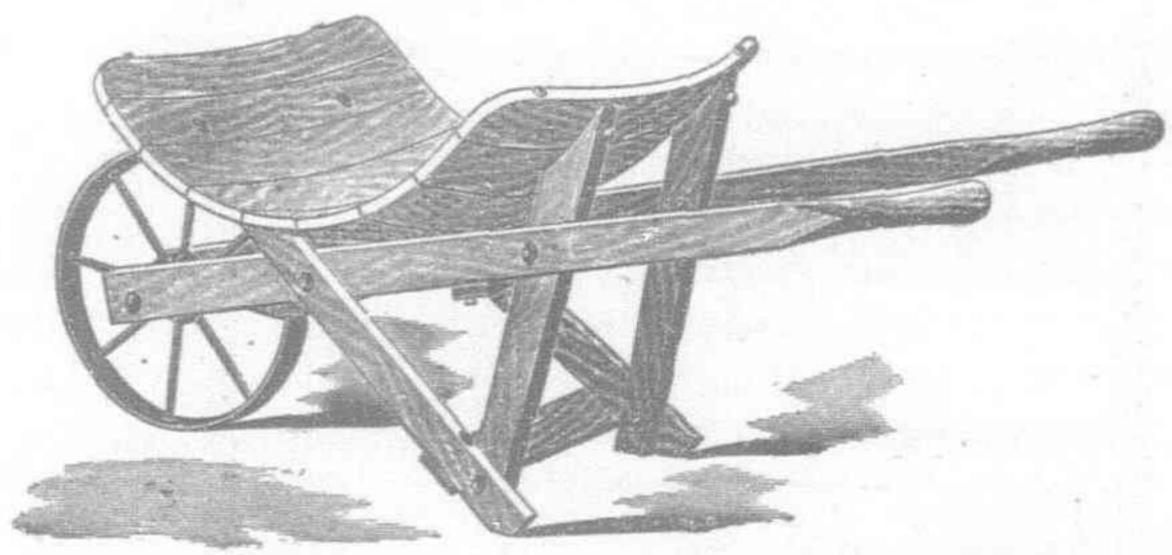
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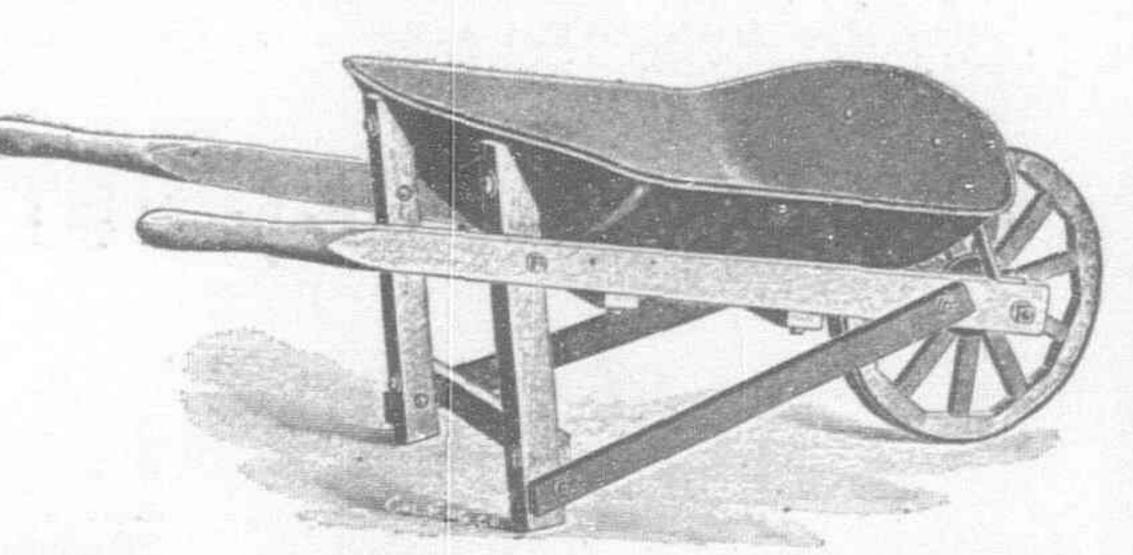
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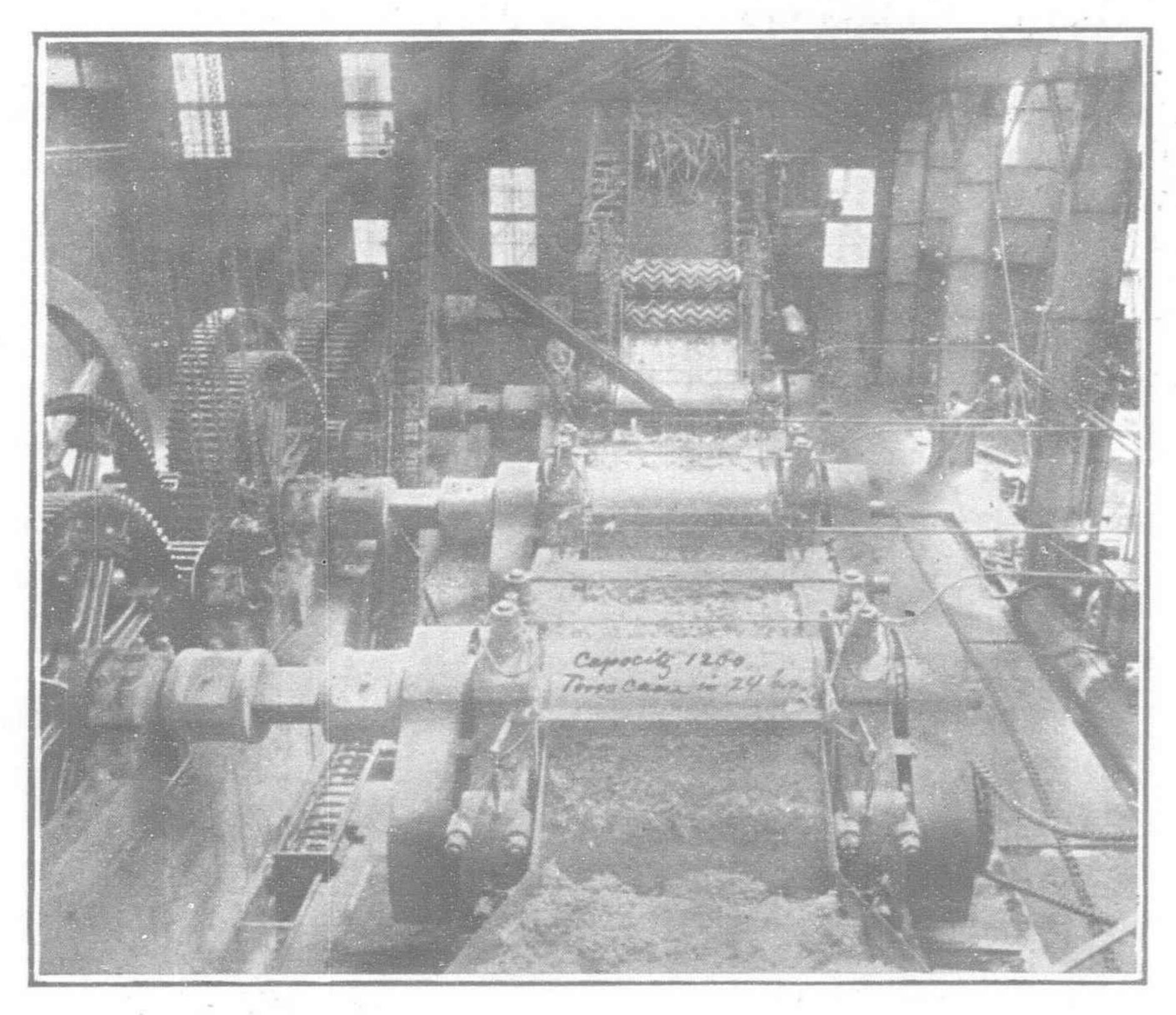
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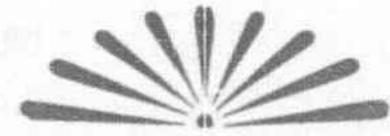
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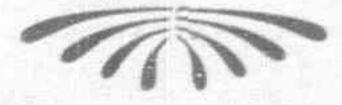
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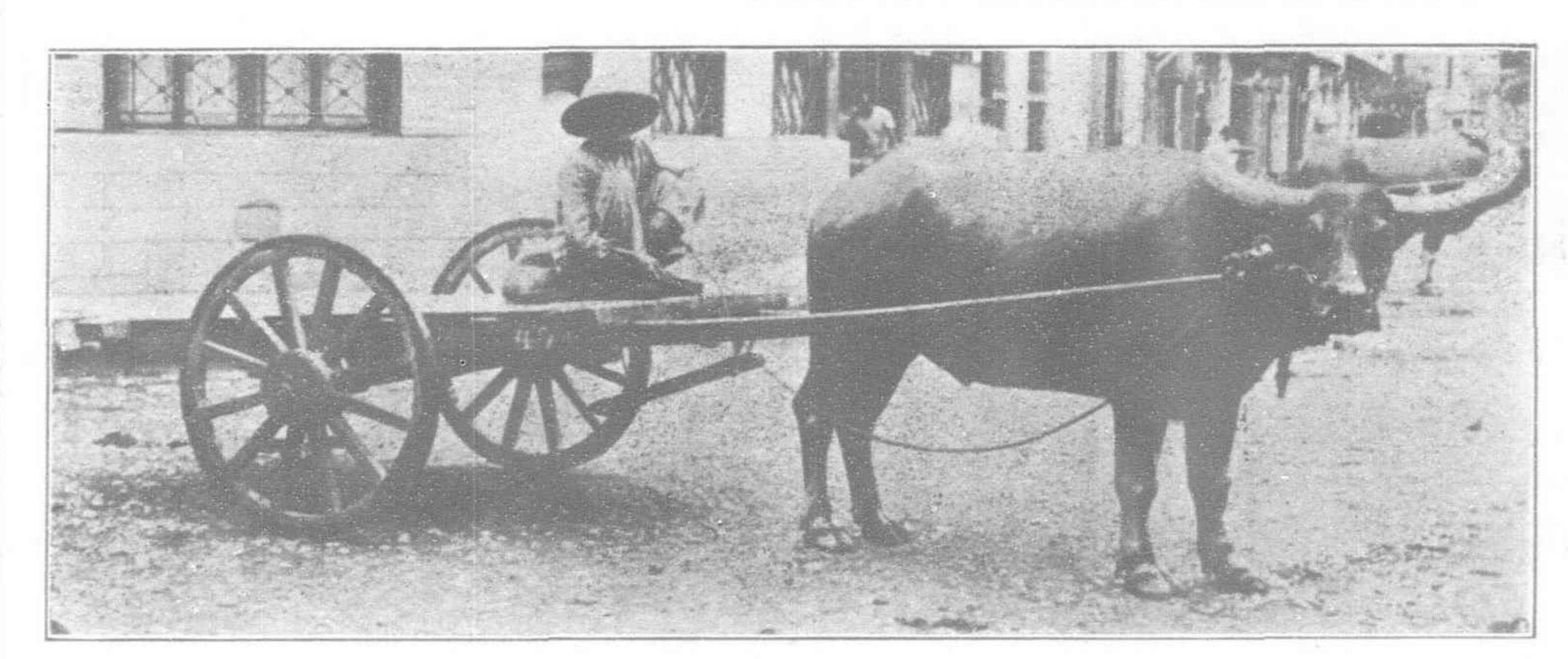
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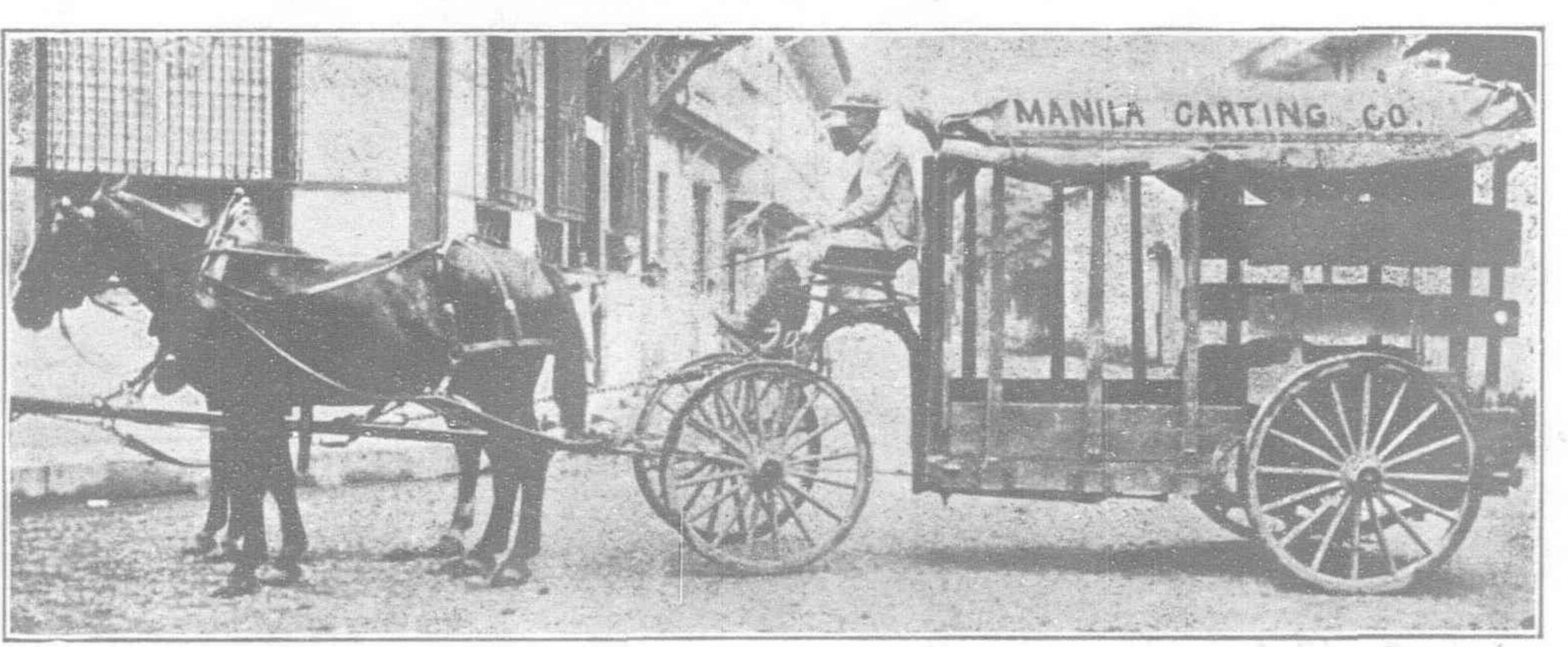
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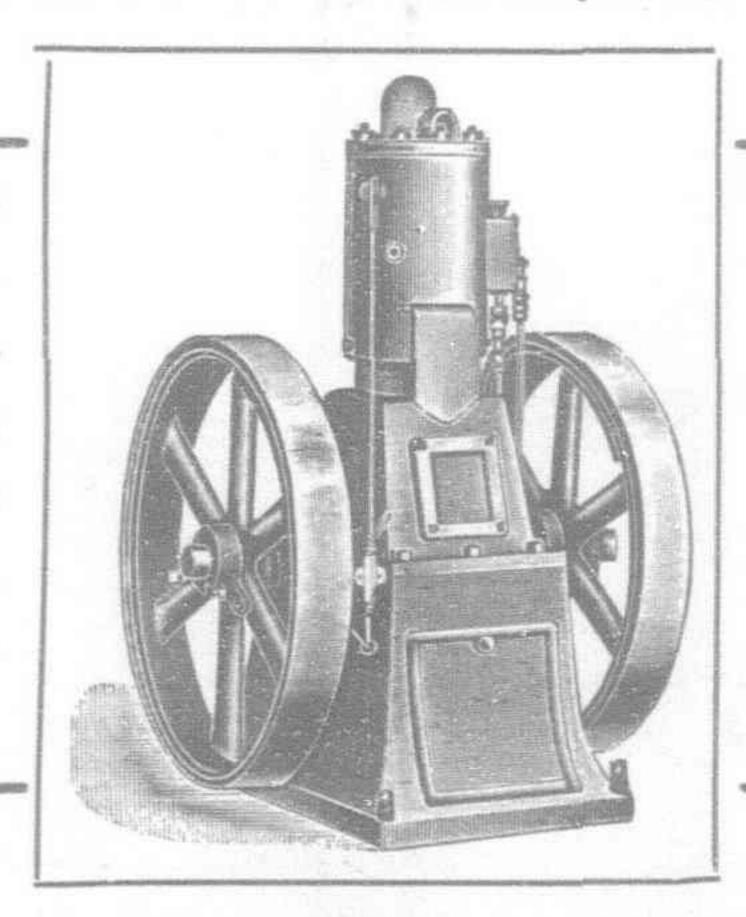
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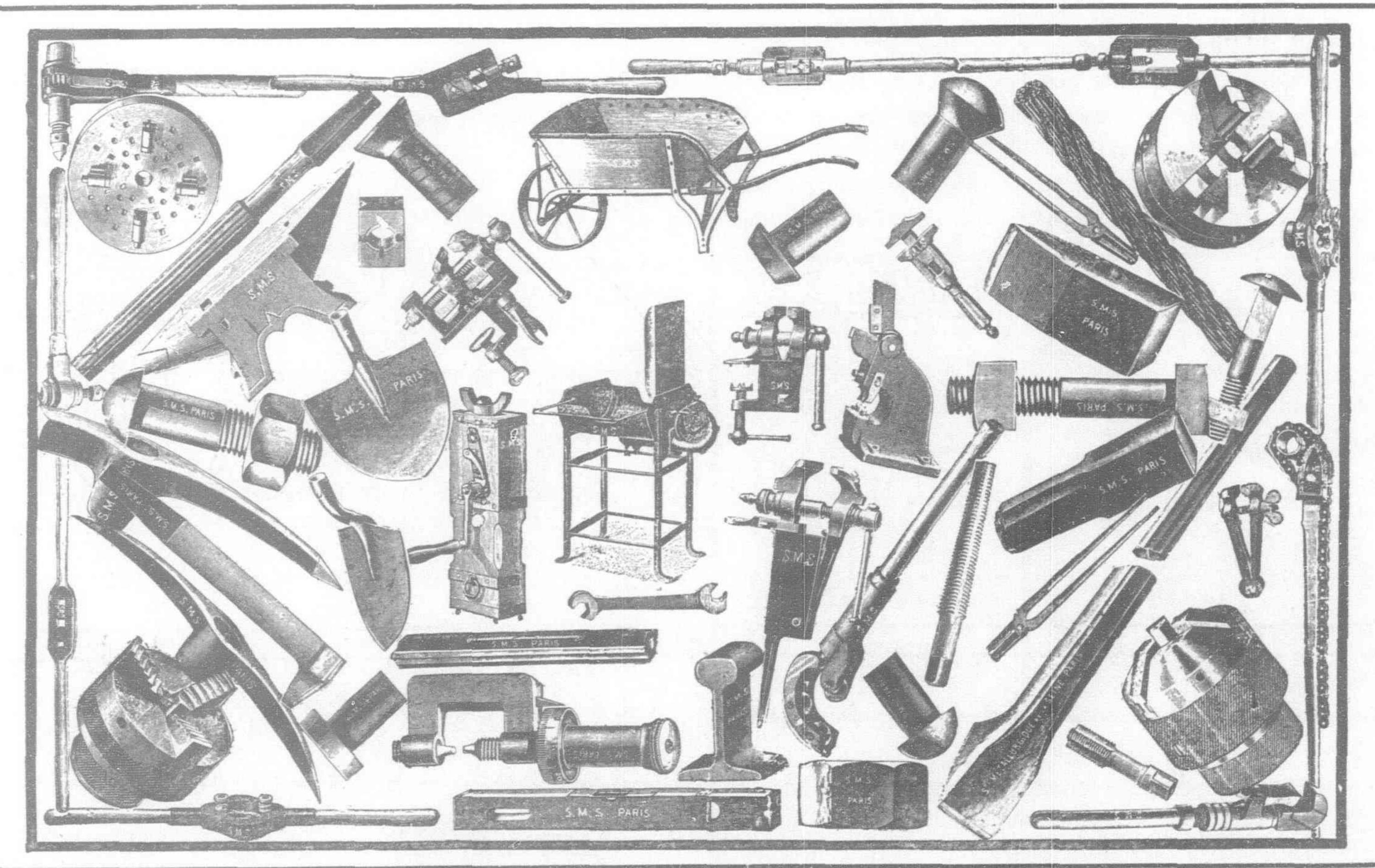
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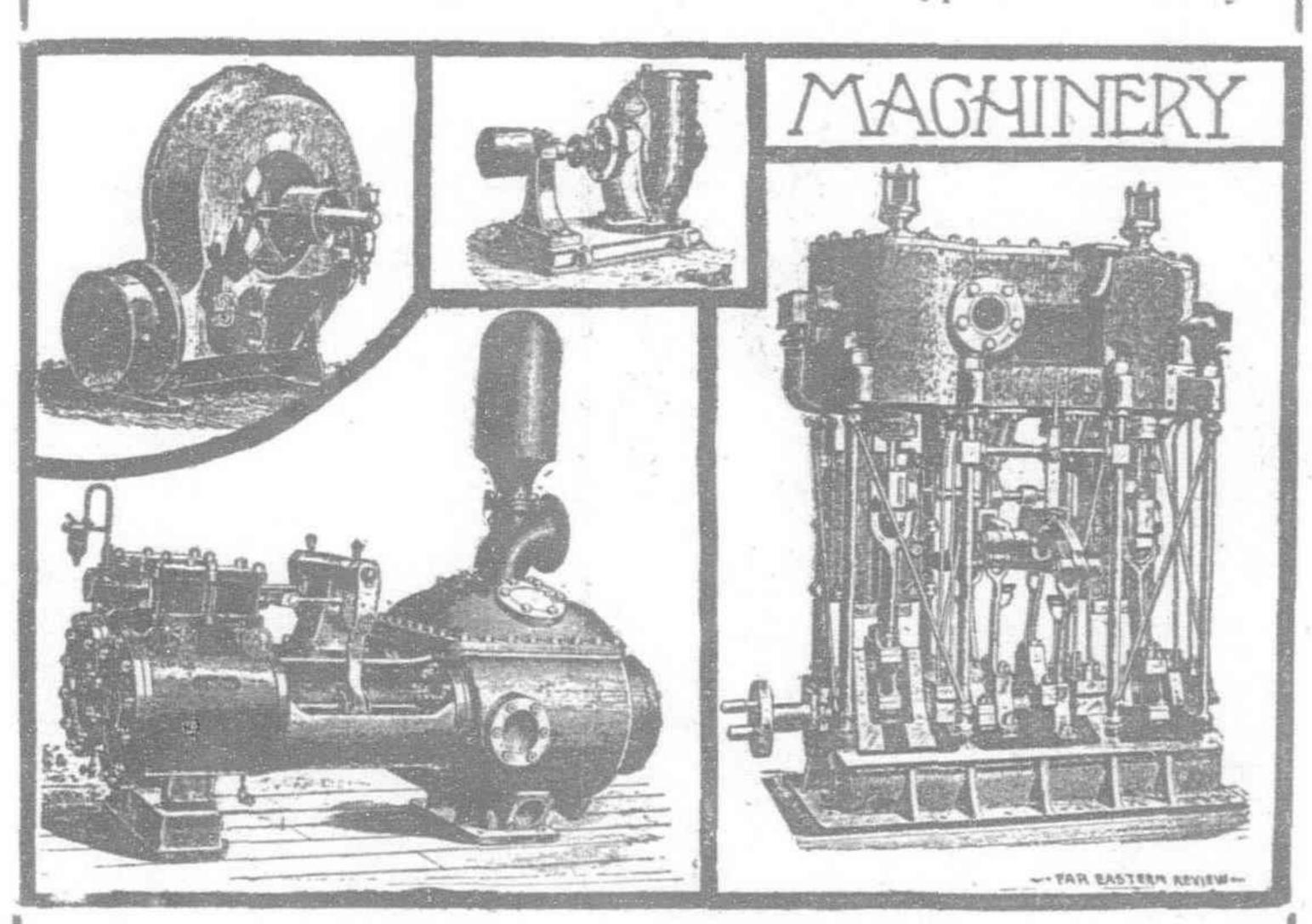
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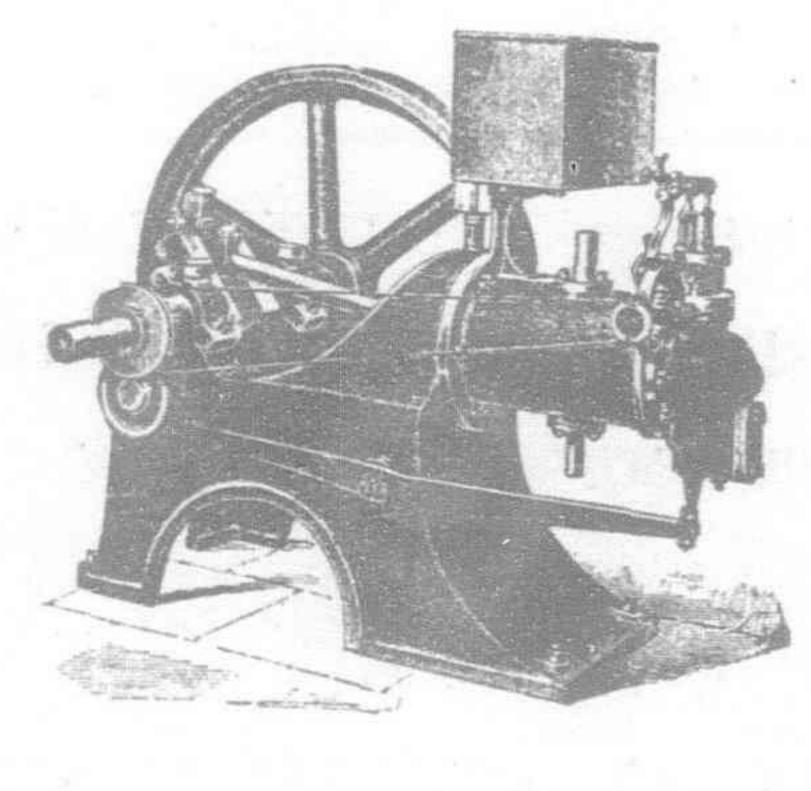
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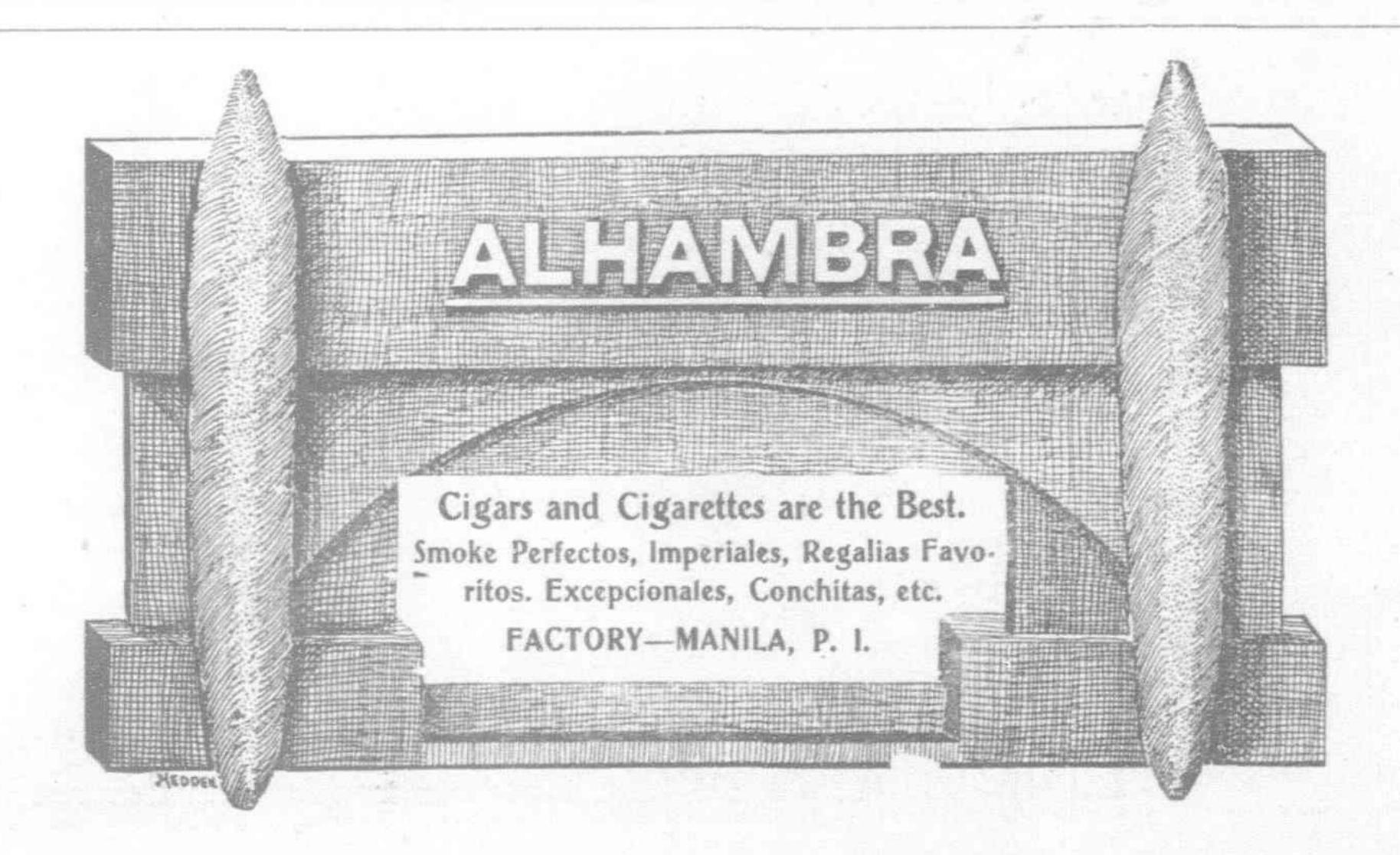
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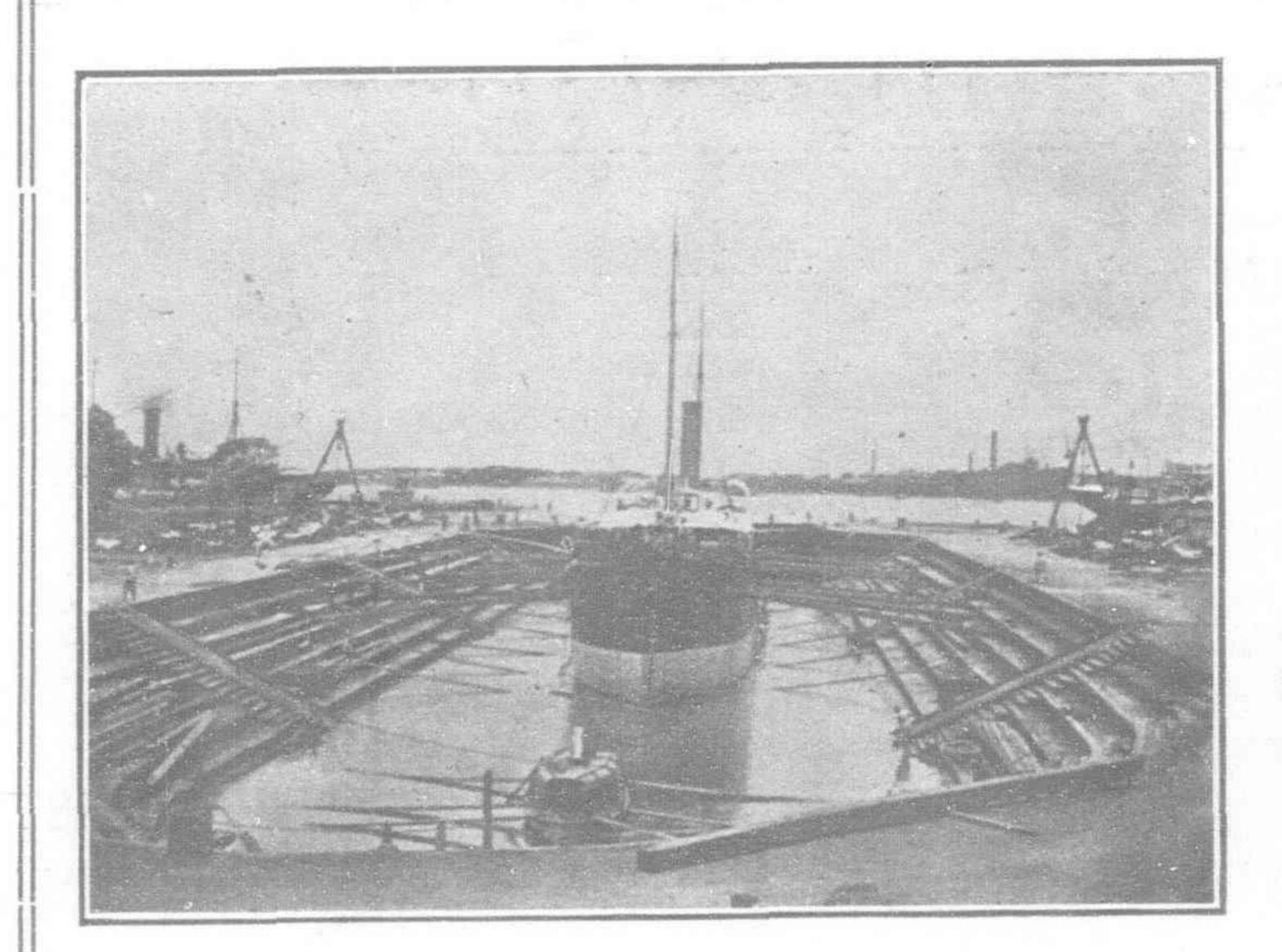
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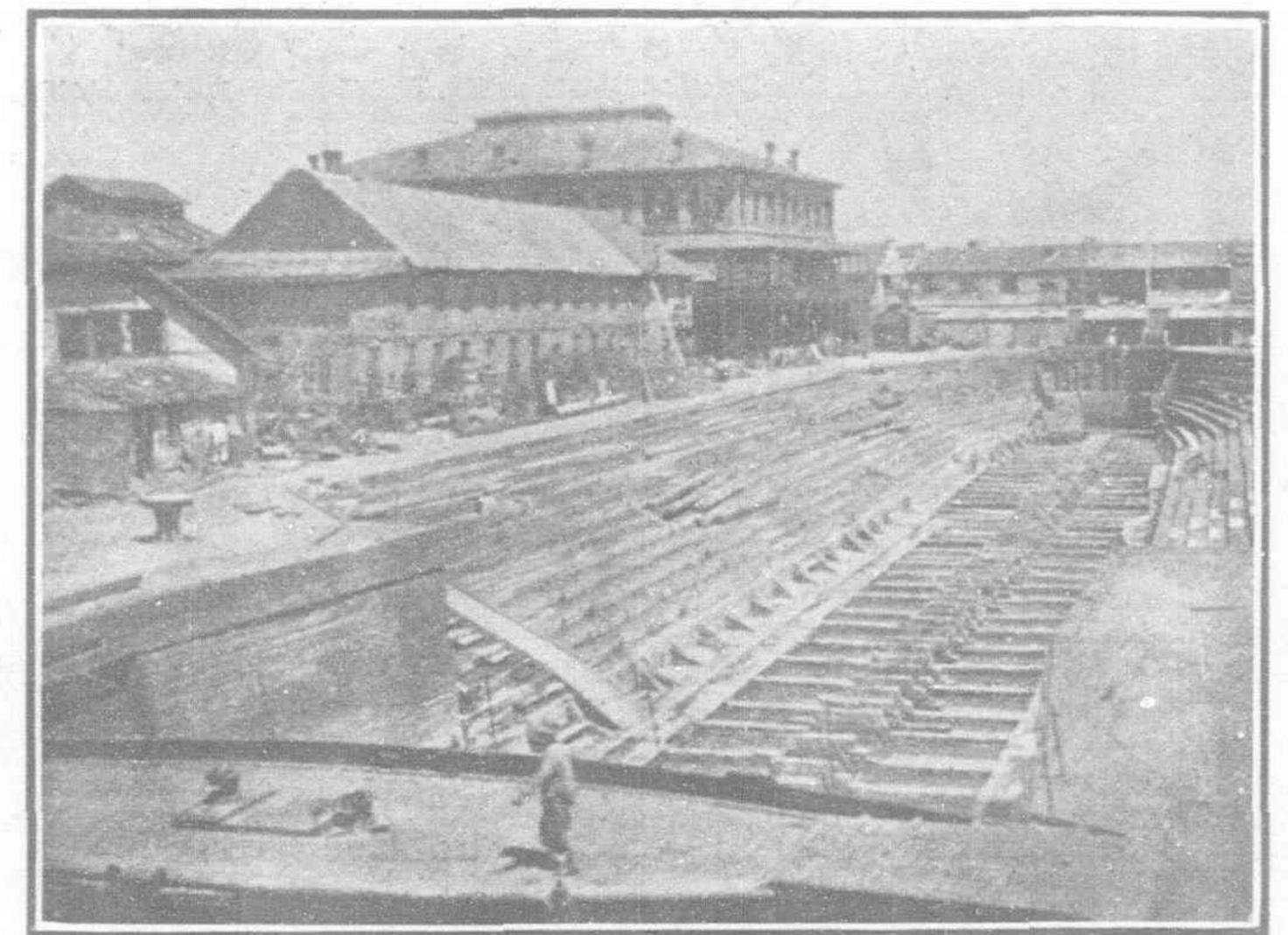
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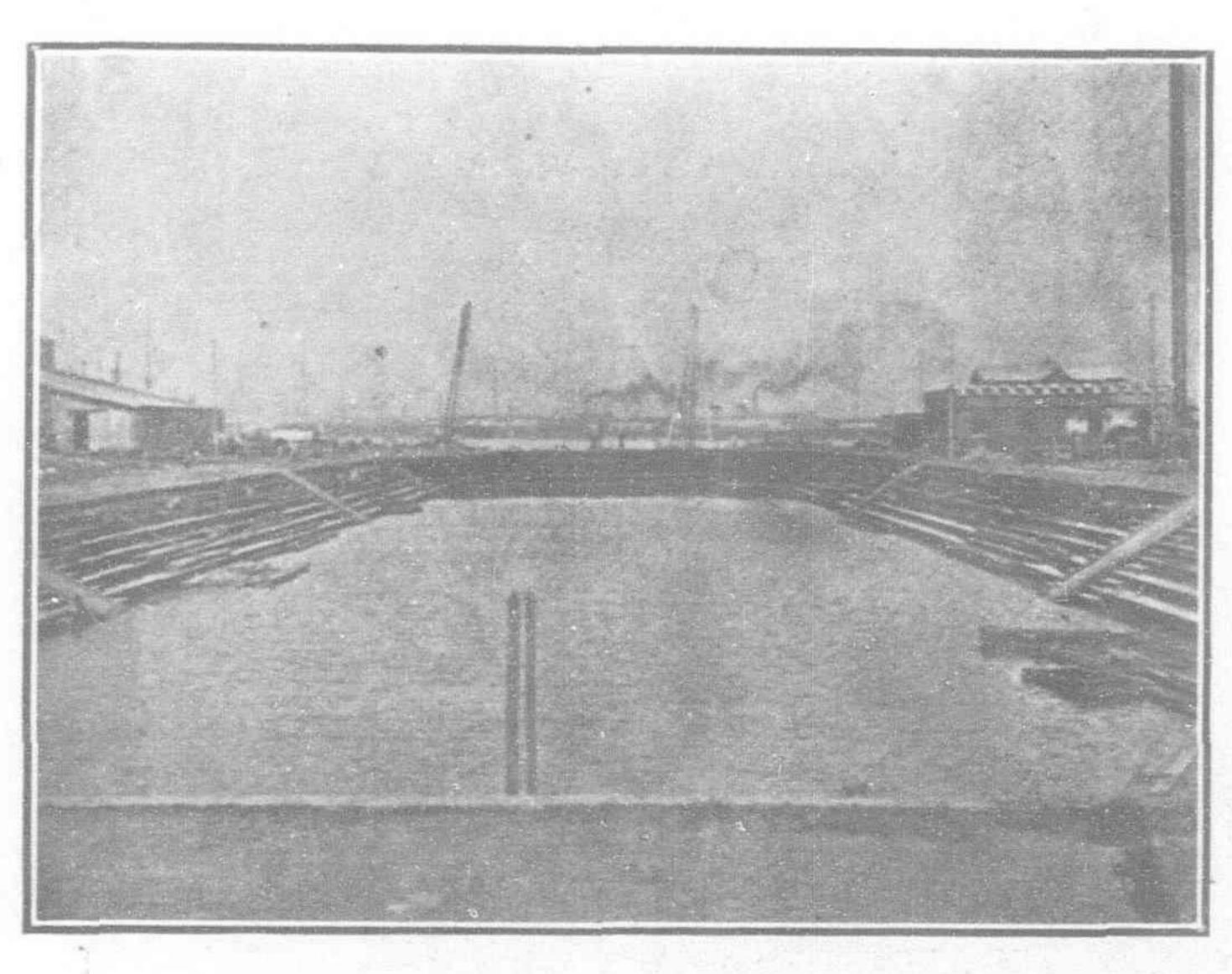
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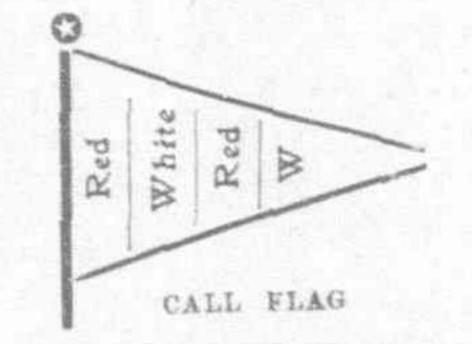
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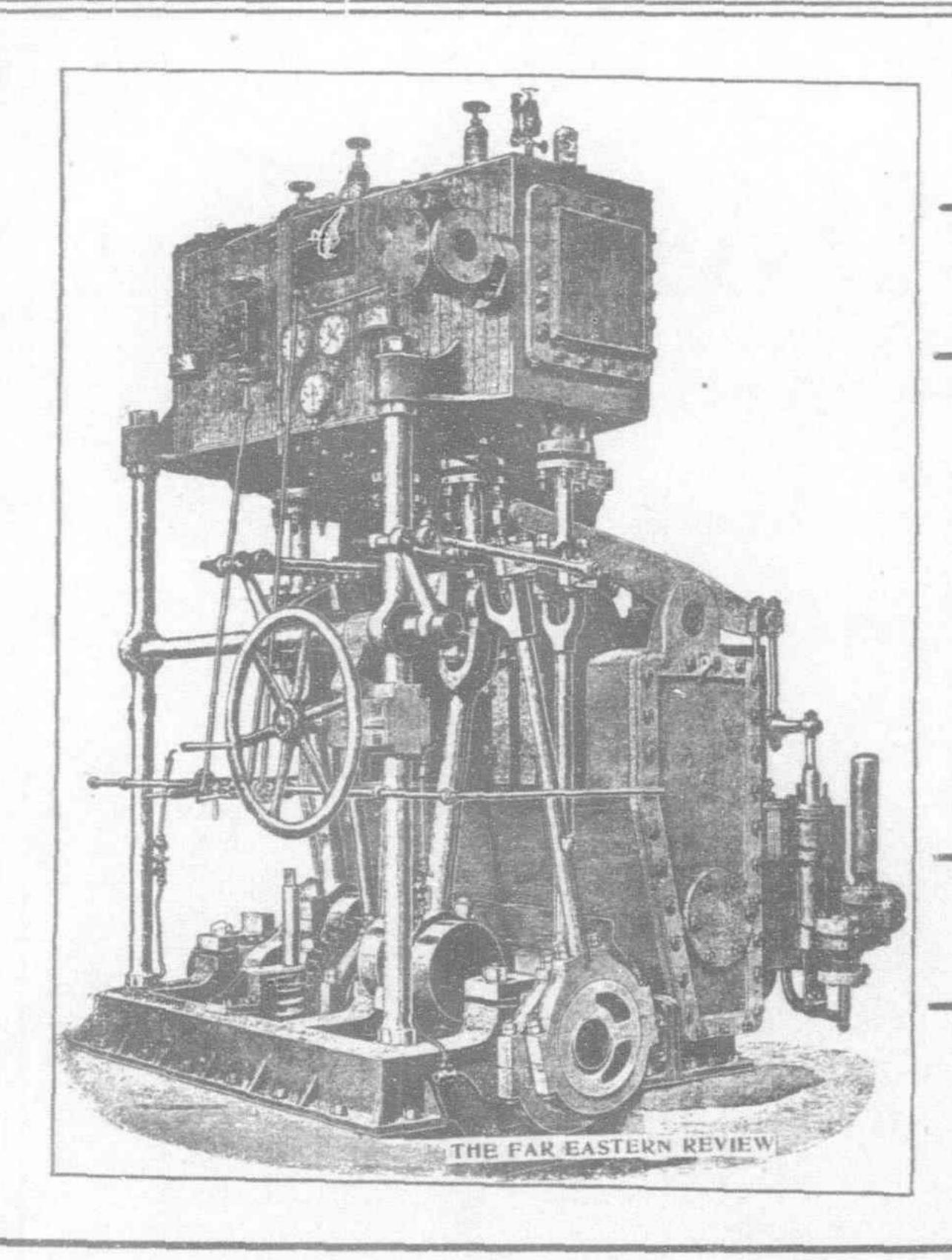
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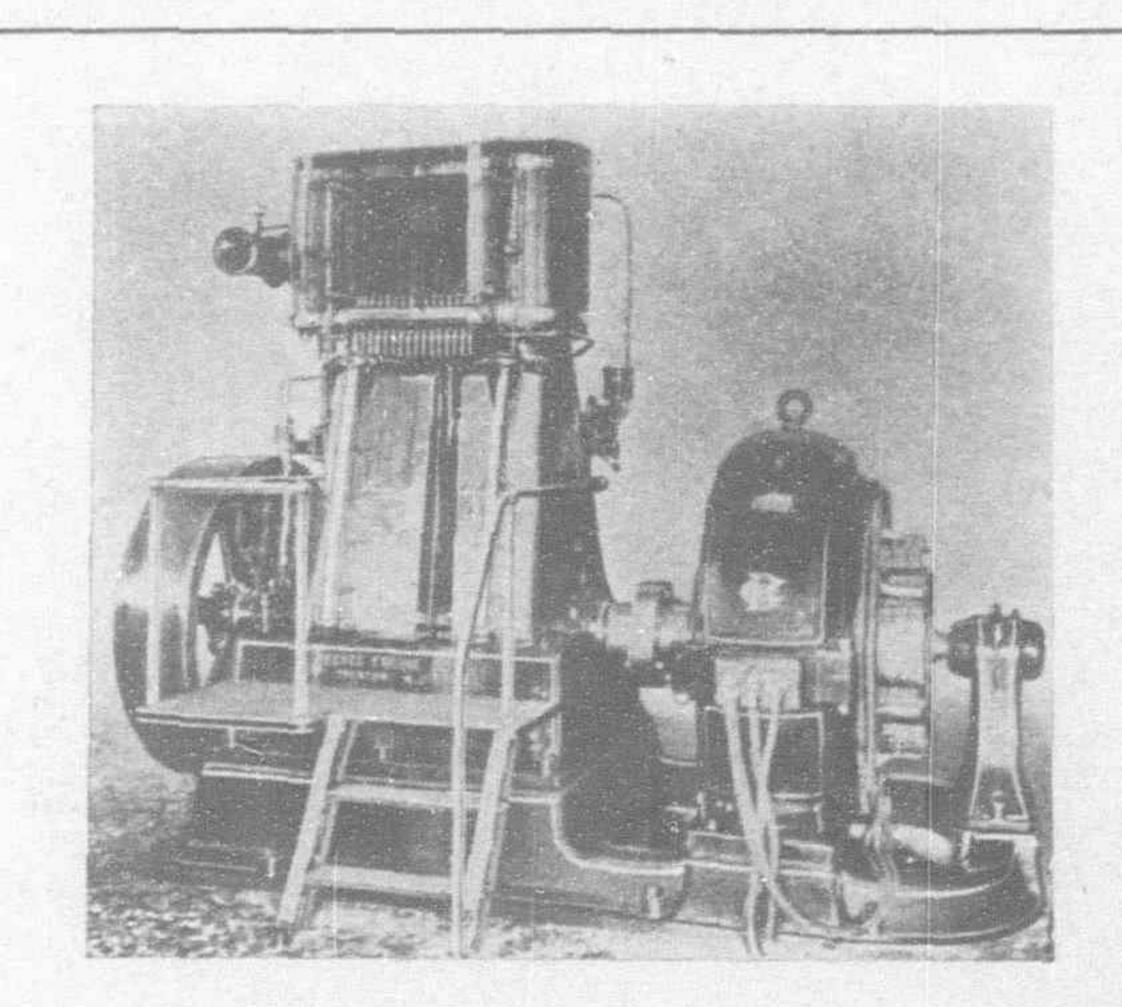
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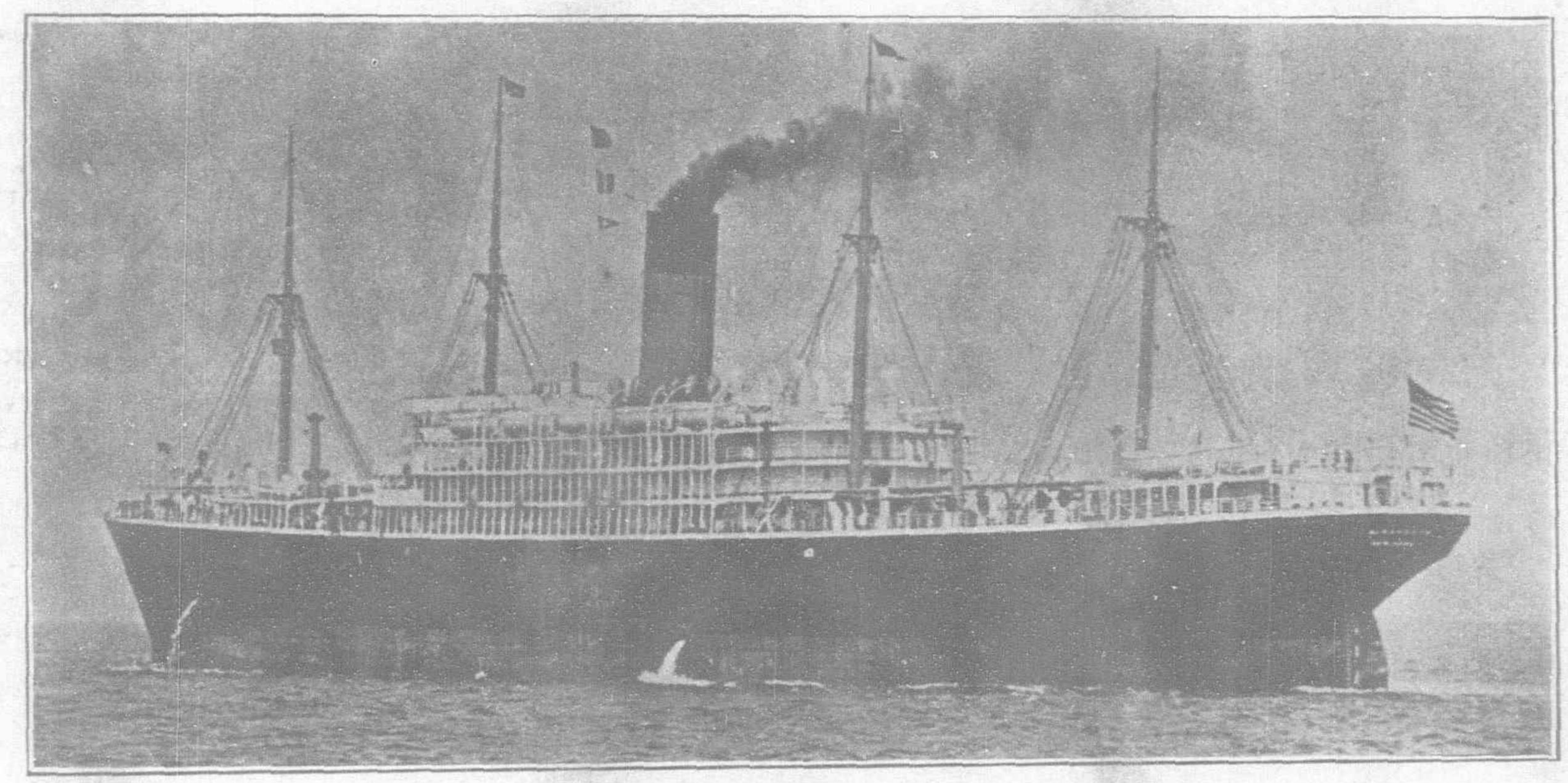
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